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[*Authors alone are responsible for the contents of their respective Papers.*]

SECRETARY'S NOTES.

1. The following officers joined the Institution during the month of September :—

H. P. Williams, Esq., late Lieutenant, 27th Regiment.
Captain D. J. Glasfurd, Argyll & Sutherland Highlanders.
Lieutenant C. W. Bushell, Royal Engineers.
Captain W. D. McSwiney, late 7th Dragoon Guards.
Captain H. Ozanne, Royal Marine Light Infantry.
Captain G. P. A. Phillips, Royal Engineers (Militia).
Second Lieutenant R. F. R. Nugent, Scots Guards.
Second Lieutenant T. G. N. Bardwell, Scots Guards.
Second Lieutenant E. D. H. Tollemache, Coldstream Guards.
Second Lieutenant T. G. F. Paget, Scots Guards.
Second Lieutenant G. M. Evans, Welsh Regiment.
Lieutenant C. S. Pugsley, 2nd Middlesex R.G.A. (Vols.).
Major K. K. Knapp, Royal Garrison Artillery.
Lieutenant A. J. North, The Northumberland R.G.A. (Militia).
Second Lieutenant J. S. Hicks, Royal Marine Light Infantry.

(No officer of the Royal Navy, Royal Naval Reserve, or Imperial Yeomanry joined the Institution last month.)

2. During the afternoon of Trafalgar Day, Saturday 21st October, the band of the Royal Naval Hospital School will play a suitable selection of music in the Museum.

3. The Institution is now closed at 7 p.m. until the spring.

4. The following additions have been made to the Museum :—

a. Small painting of Admiral Lord Gardner, given by Admiral B. W. Page, some years ago.

Alan Gardner was born at Uttoxeter, in Staffordshire, on 12th April, 1742. He commanded the "Preston" flag-ship of Rear-Admiral Parry in 1766, and was present at Lord Rodney's action on 12th April, 1782. He was appointed Commander-in-Chief at Jamaica in 1786, and after holding the appointment for three years came home to take a seat at the Admiralty. He was present, in the rank of Rear-Admiral, at

Lord Howe's action of 1st June, 1794, and for his services was created a Baronet and promoted to Vice-Admiral later in the year. In 1799 Gardner was promoted to the rank of Admiral, and in 1800 was raised to the Peerage, and for a short time held command of the Fleet in the Channel. He died in 1809.

The portrait was executed from a drawing from life, at Canton in 1804, for Captain B. W. Page, H.M.S. "Caroline."

b. Lock of hair of the Emperor Napoleon I., cut off after his death. It was given to Major (afterwards Major-General) Anthony Emmett, the Royal Engineer Officer at St. Helena; on his death it passed into the possession of his daughter, Mrs. Coddington, whose son gave it to this Museum. Given by the Rev. C. W. Coddington, M.A.

c. The 17th Lancer s uniform, worn by the late Field-Marshal H.R H. the Duke of Cambridge, K.G., lent by the Officer Commanding 17th (the Duke of Cambridge's Own) Lancers.

d. Officer's Shako plate, and belt buckle of the 6th West York Militia, given by Major H. Huntington, 7th Battalion Rifle Brigade.

5. No Index to the contents of the JOURNAL having been issued since 1886, one is now in course of compilation, and will, it is hoped, be ready for issue by the end of the present year.

6. It is intended to issue a new "General Catalogue" to the Library, containing the additions for the last 15 years, but involving as it does, a considerable amount of work, it will not be ready for some months.

7. *Special Military Essay, 1905.*—Essays bearing the following mottoes have been received; no further essays can now be accepted:—

"Adsum."
"Double the pay of our non-commissioned officers."
"Country and Religion are twins."
"Aes triplex."
"Dum Spiro Spero." (*a*).
"Semper paratus."
"Quis desiderio sit pudor aut modus."
"Ave Britannia! Prolis tuæ manes te salutant."
"Noblesse oblige." (*a*).
"Si vis pacem para bellum."
"Salus."
"Jo Hook'm."
"Prius dementat."
"Semper Fidelis."
"And behold it was a dream."
"Imperii tutamen nemini alienum."
"Dum vivimus vivamus."
"God helps them that help themselves."
"But above all for Empire and greatness, etc."
"White Heather."
"Inter Arma Silent Leges."
"Imperium Terris, animos aequabit Olympo."
"Experientia docet."

"Ready, aye, ready."
"Let them all come."
"Pugna pro Patria."
"Mors janua vitæ."
"Pro Rege, Pro Lege, Pro Patria."
"England expects that every man will do his duty."(*a*).
"Holdfast."
"Nil Desperandum."
"England expects that every man will do his duty."(*b*).
"Out of the mouths of very babes and sucklings, etc."
"Dulce et decorum, etc." (*a*).
"Dum spiro spero." (*b*).
"N.Y.D."
"Emeritus."
"Whatsover thy hand findeth to do, etc."
"Merge profundis."
"Dulce et decorum est, etc." (*b*).
"In pectore robur."
"Multum in parvo."(*a*).
"England expects that every man, etc." (*c*).
"Perseverando."
"Jam Minerva, quam Marte."
"Insurance."
"Tuum est."
"Gaudet Tentamine Virtus."
"Nothing for nothing, and very little for a half-penny."
"When the strong man armed keepeth his house, etc."
"To Deprive a Soldier of his Ambition is to Cut off his Spurs."
"Noblesse Oblige." (*b*).
"Redde Diem."
"Mene, mene, tekel upharsin."
"Nunquam non paratus." (*a*).
"Aut agere aut mori."
"If you want peace prepare for war."
"You nobless English be copy, etc."
"Unitate Fortior."
"Nemo patriam exuere potest."
"Toujours prêt."
"Bydand."
"One and all."
"Pro patria."
"Tout citoyen se doit à la défense de son pays."
"Persto."
"Why sought I bonds when I was free, etc."
"Fortes creantur Fortibus."
"Fortitudine."
"Anti-Apathy."
"Non sibi, sed patriæ."
"Let every man that is not worthless come."
"This is my answer : not that I loved Cæsar less, etc."
"Decrevi."
"Multum in parvo." (*b*.)
"E pur si muove."
"Expansive not expensive."
"Pretio prudentia præstat."

"Fortiter et Fideliter."
"Cavendo Tutus."
"Nec Temere nec Timide."
"Civis :—Para bellum si vis pacem."
"Ardua Tendo."
"United we stand; divided we fall."
"O God of battles, steel my soldiers' hearts, etc."
"When the strong man fully armed."
"Norton."
"If we rest we rust."
"Tu Romane memento."
"Vir paucis verbis facundas."
"When the strong man armed, keepeth his palace, etc."
"Pax Britannica."
"Jamais arrière."
"A thousand years' scarce serve, etc."
"Nunquam non paratus." (*b*).
"Arma Virumque."
"Suaviter in modo, Fortier in re."
"Bis dat, qui cito dat."
"Above all for Empire and greatness, etc."
"Deus providebit."
"Der Gute ist des Besten Fiend."
"Vincit Veritas."
"E pluribus unum."
"Væ Victis."
"Firm."
"England expects that every man, etc." (*d*).
"Fortiter et recte."
"Pro Rege pro Lege."
"Quicquid delirant reges plectunter Achivi."
"Every little helps."
"In quo corriget."
"Hic manus ob patriam pugnando vulerna passi."

8. The following lectures, in addition to those already announced, have been arranged :—

10th November (Friday), "The Siege of Port Arthur from a Naval Aspect." By Mr. Alfred Curtis, Special War Correspondent of the Chicago *Daily News*.

29th November (Wednesday), "The Development of International Strategy since 1871, and its Present Conditions." By T. Miller Maguire, Esq., LL.D.

Date not fixed, "The Military Rise of Railways in England." By Colonel R. Elliott-Cooper, M.Inst.C.E., Engineer and Railway Vol. Staff Corps.

Date not fixed, "Militia Engineers: Their Origin, Development, and Future." By Lieut.-Colonel H. E. M. Lindsay, Rl. Mon., R.E. (Militia), late R.E.

THE STRATEGICAL EMPLOYMENT OF CAVALRY.

By Lieut.-Colonel H. De la P. GOUGH, p.s.c., 16th (The Queen's) Lancers.

Tuesday, 16th May, 1905.

Major-General R. S. S. BADEN-POWELL, C.B. (Inspector-General of Cavalry), in the Chair.

The CHAIRMAN :—It is my privilege to introduce to you this afternoon Lieut.-Colonel Gough, the lecturer, and I may say that I am very glad to see a good number of cavalry officers here, because it is a rather unusual sight in this hall. We want more of them. I believe if more of them joined this Institution, and attended its meetings, they would find it very useful for them. There is a great deal of reading demanded from officers nowadays, and by becoming members of the Institution they would be able to face, with greater equanimity than in the past, the examinations that are such a terror to them at present. They would also see a good deal of other arms in the sister services, the Navy with its water-tight bulk-heads; the Infantry, the Artillery, the Engineers, and their respective methods and characteristics, and it would open up their minds considerably. They would also learn to see themselves as others see them, and they would then realise that water-tight bulk-heads exist in other places besides the Navy. We are rather too much shut up in compartments at present, and I think it would open up our minds to be more in this Institution. I regret to say that Lord Roberts is unable to be present this afternoon; but he has sent this letter to Colonel Gough, which I will read to you. After expressing his inability to be present, he says :—" There was, I believe, an idea at one time that the introduction of long-range weapons would render Cavalry less useful in war than previously, whereas the fact is, that the duties which will devolve on Cavalry in the future will be even more important than in the past. It will be more difficult to obtain information of the enemy's movements, which, as you say, is the main *rôle* of Cavalry. Greater distances will have to be traversed, requiring the horses to be more carefully looked after, and all ranks must be carefully trained. Armed with the modern rifle, Cavalry has an independence hitherto unknown. As you remark, it possesses the power of defence or of attack on foot without in the least degree losing any of its offensive value when mounted. I agree with what you urge about a greater proportion of Cavalry being required than in the past, its economical employment, and the necessity for an intimate knowledge on the part of commanders of the proper use to make of their Cavalry." I will not delay you further, but at once introduce the lecturer to you, who will address you on Cavalry Strategy, a subject which necessarily interests the majority of us here present.

LECTURE.

AFTER 1815, all the nations of Europe seemed to grow tired of war; and the military art, which had flourished so luxuriantly during the previous twenty years, fell into decay. No arm suffered so much on account of this general decline in military thought as the cavalry.

This was partly owing to the growing efficiency of fire-arms, which caused the superficial critics (who thought war was made up of battles) to lay down as a military axiom that the days of cavalry were over, and another cause which was tending to produce this same erroneous impression was that the employment of cavalry is essentially a great art, which requires for its full development the guiding hand of a skilled artist who is intimately acquainted with the principles governing its action.

During the majority of the wars since 1815, this skilled artist, one who thoroughly understood how to use his tool, had not been found, owing largely to the decline in the study of war which seems to have taken place up to 1870 in almost all countries except Germany.

The cavalry in consequence has been, more often than not, misdirected, and has been employed without any regard to the great strategical principles which govern its action. This has resulted in still further detracting from the importance of cavalry in the minds of those who have not made a very close study of war.

That this is a very serious error there is no doubt. Military criticism is always liable to dash into extremes, and one of the most dangerous extremes it has run into in England is that of belittling the value of cavalry.

Far from its importance having diminished on account of the improvement in firearms, a numerous, well-equipped, well-trained, and well-handled cavalry has become one of the most essential parts of all Armies. Its value, more especially in its strategic employment, has increased enormously.

It was reserved for the Americans chiefly to exemplify the importance of the strategic *rôle* of cavalry in this respect. It is very interesting to read an article by General von Pelet-Narbonne, a German cavalry general, a translation of which appeared in the JOURNAL of the Institution last March, and in which he lays great stress on the value of the lessons to be learned from the United States cavalry. This is especially curious, emanating as it does from the pen of a German cavalry officer, because it has been the fashion in Germany and among those who look only to Germany for inspiration on cavalry matters, to depreciate the United States cavalry, and to assert that they would not for one minute have withstood European cavalry trained on the German methods. But the War of Secession showed how greatly the strategic value of cavalry has increased, when, owing to being armed with a good firearm, it possesses the power of defence or of attack on foot, without in the least degree losing any of its offensive value when mounted.

Cavalry is the great *strategical* arm, while infantry and artillery may more properly be styled the tactical arms. As such, cavalry is the special instrument in the hands of the Chief of the Whole Force; upon the use of it the success of his strategy will largely depend. The value of information about the enemy has always been of transcendent importance; but with the enormous Armies that nations now put in

the field the necessity of early information has become a vital necessity, for these large numbers take far longer to put in motion and to concentrate on any one battle-field than the smaller numbers of the past.

Upon early information depend the power and liberty of the Chief of manœuvre, and on it also depends the mobility of the whole Army. For the mobility of an Army depends as much on prompt, clear, and definite orders emanating from headquarters as upon the marching power of the men; and orders will not be promptly issued or be clear and definite unless the Chief has the confidence based on the possession of ample and early information. Without such information he will pass rapidly from confidence to uncertainty and fear. Anxiety of mind will act as a drag on all his movements, and he will be slow and hesitating. Cavalry is the strategical instrument *par excellence* for this purpose, which is attained under two forms.

These two forms can be expressed by the terms "to discover" and "to cover," which condense the principles of the strategic employment of cavalry.

These principles, in a vague and indefinite form, have long been matters of common knowledge; but I think their application has not always been sufficiently studied. It is not sufficient for soldiers to know vaguely the principles governing the action of cavalry. They must *study war*, and see and understand for themselves the application of these principles.

The point that stands out clearest in their application is that to "discover," or the service of information, and to "cover," or the service of security, are two entirely distinct functions, which must never be confused together, and for each of which an entirely separate body of cavalry must be detailed. This absolute division in the duties of cavalry has long been recognised by military writers on the Continent, for the last 20 years at least, and yet it was only in the last somewhat abused edition of our "Cavalry Training" that this distinction came to be recognised. As late even as in the previous "Cavalry Drill Book" the confusion of ideas on this subject was very apparent.

The first essential for the proper performance of the two services, of information and of security, is the distribution of the cavalry throughout the Army.

Sufficient cavalry must be attached to every division and corps to ensure for them immunity from local surprise; in fact to perform for them the service of security. These bodies of cavalry will be required to make good the front and flanks of the troops up to a distance of 2 or 3 miles, and to prevent the enemy's patrols penetrating as far as the main bodies, when the troops are either on the march or halted. The number of cavalry attached for these duties should be the minimum sufficient to carry them out properly, leaving the remainder of the cavalry to form as large a mass as possible, divided into brigades, divisions, and even corps, to carry out the great strategical *rôle* of cavalry, namely, the service of information. This mass of cavalry must be under the direct orders of the Chief of the Whole Force, and it is his special strategical instrument.

Of course, when army corps or armies are detached and acting separately, it will be advisable to add some extra cavalry to them for the sole purpose of providing them with information; but the Chief should always keep a mass of cavalry in his own hand, to act under his own particular directions.

This was always the custom of Napoleon; it was the custom of Lee and Jackson and Grant; and it was in the neglect to provide this instrument that the German General Staff first laid themselves open to criticism in their handling of the cavalry, both in 1866 and 1870.

At the opening of both these campaigns, the Germans were divided into three armies. Each of these armies had a cavalry regiment attached to each infantry division, and in addition a certain number of cavalry divisions and brigades; but there was not a single cavalry soldier under the direct orders of the German Headquarters. There was not a single mounted man whom Moltke could employ on any particular mission of his own.

Any information that reached him came through one or other of his Army Commanders. They very naturally used their cavalry entirely from the point of view of their own particular interests, and also in accordance with their capacity and their appreciation of the use of this arm.

In 1866 the knowledge of cavalry of all three Army Commanders was limited, and the cavalry divisions, instead of moving far to the front, obtaining early information of the enemy's dispositions and movements, and ensuring the co-operation between the separated armies, marched slowly and painfully with the infantry columns, and the only reconnaissances attempted were carried out by the *divisional* cavalry, who were of course tied to the heads of their infantry divisions, with a very limited range for exploration. In 1870, two out of the three commanders had no idea at first of using their cavalry at all, and the information that reached Moltke was very meagre, and he suffered some anxious moments in consequence, while the armies suffered from some unnecessary counter-marches and delays owing either to misleading information, or to lack of it altogether.

Moltke in these two campaigns depended, therefore, largely for his information on how his subordinate commanders employed their cavalry, and he himself could not direct any body of cavalry on any particular objective at any given moment to find out what was there. Nor could he dispose of any mass of cavalry with which to cover the strategical concentration or manœuvres of his three armies.

This is the great *rôle* of modern cavalry, namely, to obtain early information and to cover the strategic manœuvres of the army. The service of *direct* security having been provided for by attaching small bodies of cavalry to divisions and army corps, the question arises, how to make use of the cavalry masses for strategic purposes. I have used the expression "direct security" advisedly, as the cavalry masses themselves, in the performance of their task of seeking information, will of course provide security indirectly, in a strategical sense. They can do this by meeting and defeating the enemy's cavalry, and so preventing him from gaining information, and also by themselves discovering the positions and movements of the enemy's main forces, thus allowing the Chief to determine his plans with that security and certainty, of which good information is the only source.

The solution of the problem as to the strategical employment of cavalry is provided for us by history. Continental writers have made a close study of this subject; but I do not know of one book written in English dealing wholly with this most important matter.

I propose to give a summary of their conclusions, and then to briefly enter into the effect of their application, or the neglect of their application, as illustrated by the German cavalry in 1870.

The first conclusion is that the cavalry masses must be pushed far to the front in concentrated bodies, and on certain *definite* and well-defined strategical points. There must be nothing vague or general in the tasks that are allotted to these cavalry masses. The vague and general idea on this employment of cavalry, namely, the covering the whole front and flanks of an army with numberless small bodies of horsemen, advancing on every road and carefully maintaining lateral communication with each other, is a most pernicious one, and is contrary to every principle of strategy. Yet it is none the less a very prevalent idea. This misleading notion can, I think, be attributed to the frequent use of the expression "the cavalry screen," and also largely to the unfortunate formation that was laid down in our late "Cavalry Drill Book" for the performance of the so-called duty of "Screening and Reconnaissance." As to the duty of screening by cavalry, I would like to say something later.

As regards the task of seeking information, the necessity of employing the cavalry concentrated is clearly recognised.

But if the cavalry be kept concentrated, they cannot be seeking for the enemy everywhere. The question which, then, has to be decided is: upon what points should these masses be directed? No rules can be laid down for this; and the answer to the question can only be found in the varying circumstances and requirements of each case, based on a thorough grasp of the strategical situation and a careful and close study of the map of the theatre of operations.

But as the *rôle* of the cavalry masses is to discover the *main bodies* of the enemy, and as these main bodies must be in the neighbourhood of certain important strategic points, the positions of which are usually decided by the junction of important roads and railways, and as large bodies can only advance on the principal roads, it is these strategic points and principal roads which must be reconnoitred. By this method not all roads and places will be reconnoitred; but these will be the least important. Hostile patrols will thus, it is true, be able to pass unseen, but that cannot be avoided, and it will be the task of the service of "direct" security to stop them. The service of information must, before any other consideration, see everything that is possible. It must largely be left to the service of security to prevent the enemy seeing. The choice of the objectives upon which to direct the cavalry masses is one of the most important considerations which the Chief of the General Staff will have to settle, and it is one which can only be rightly and wisely decided upon by men who have made war generally and cavalry in particular a close and careful study in peace.

The next great principle to be decided upon is: to what distance shall these cavalry masses be pushed forward, and what limitations should be put on the range of their reconnaissance.

The answer to this is that, as a general rule, contact with the enemy should be the only limit set to the advance of cavalry masses, and that no limit in point of distance should be placed on them.

Cavalry employed on their great strategical *rôle* are now able to be entirely independent of the infantry columns marching in rear. Owing to their now being equipped with a good firearm and trained to use it, they are as powerful as the infantry for attack; and as a mass of cavalry will always have guns with it, the cavalry division must henceforth be regarded as a very mobile unit, combining the

powers, offensive as well as defensive, of the three arms. The fact is that they should be independent of the moves of their own army, but should be glued to the moves of the enemy's army; but by being independent of the moves of their own army, it must not be understood to imply that cavalry are not to be in communication with their own army. On the contrary, the very *raison d'être* of their being pushed far to the front is to gather information and pass it as rapidly as possible back to the General-in-Chief, and careful arrangements to this end must always be made.

The cavalry commander must only be told the object he is required to fulfil, which should be something of a definite nature, and having been given this, the number and length of his marches must be left entirely to his initiative, and to the obstacles which the enemy can oppose to his movements.

On this question, Chabot, a well-known French writer on cavalry, points out that during the march of the Germans on Châlons, after Gravelotte, the army commanders appeared to lay down exact stages for the march of their cavalry divisions, who were kept only 12 to 15 miles in front of the infantry columns, and that this might have stultified the good work that was carried out by the cavalry during this period. The cavalry did their best to carry out their *rôle* by pushing officers' patrols and squadrons far to the front—in one case they were 42 miles ahead of the main body of the cavalry divisions. But, as he points out, this was only possible owing to the passive attitude adopted at this time by both the French cavalry and the inhabitants. If there had been any opposition these patrols would have required close support, which, as it was, they would not have got. The important thing during this advance was to learn the strength, positions, and movements of the French forces, which were known to be concentrating at Châlons, and to know it as soon as possible. The object being thus clearly defined, a mass of cavalry should have been detailed to attain it, and, as Chabot says, "the cavalry for exploration should not have had its halting places fixed, nor normal and regular marches detailed, but should have only been told the object which it was required to attain."

That cavalry should be pushed forward into contact with the enemy at once must not, however, be taken as a hard and fast rule. There are occasions when this is undesirable, such as, for instance, when the great blow is being prepared, and it is essential not to warn the enemy of his danger. The campaign of 1805 on Ulm affords us an example. When the march of the Grand Army from the Main was just commencing, and before the Austrians in Ulm were yet aware of it, Napoleon ordered his cavalry covering his advance not to pass a certain line for fear of prematurely alarming the Austrians. A few days later, as we shall see, when his move had developed, and there was no longer a question of the secrecy of his presence, though there was a great question still of concealing and protecting the *direction* of his march, he changed his methods, and pushed a large body of cavalry on to Ulm and into immediate contact with the Austrians.

The question of raids by cavalry has been very largely discussed; but like most operations of war, there are no hard and fast rules that can be laid down on the subject. The propititious moment for such raids and their objective depends entirely on the strategical situation, on the *moral* of the enemy and his commander, on the numbers of

the cavalry available, and, lastly but not least, on the results that may be hoped for from the raid.

There is one conclusion, however, that stands out clearly as a result of a study of the American War of Secession, which is, that when an army is engaged in active operations against the enemy, it is not wise to deprive that army of its cavalry masses merely to harry and harass the enemy's communications. It is especially at such critical periods that the Chief has most need of his cavalry, both to discover the enemy's movements and to cover his own; and besides, a body of cavalry merely riding across the communications of an army, burning a few storehouses, and tearing up a few miles of railway is a very different thing from placing across an enemy's communications a force which is strong enough to hold its own against determined attack. No one realised the vulnerability of his enemy's communications more than Napoleon, and no one struck more often at them, but it is interesting to note that he always struck with his main force, not with his cavalry; in fact, very much the reverse, for he employed his cavalry during these operations to keep in touch with the enemy's front and flank, and so cover the flank marches of his main columns.

There are certainly two notable examples in the War of Secession of the disastrous consequences of detaching the mass of cavalry for the purpose of raiding the enemy's communications, when the main army was engaged in active operations, and these are the campaigns of Chancellorsville and Gettysburg. In the first case it was the Federal Chief, and in the second it was the Confederate Chief who committed the error, and both paid very dearly for it.

The great lessons to be learnt from these examples are, first, that though the cavalry mass must be entirely independent of the *marches* of the infantry columns, and may often have to make long detours, riding round the enemy's flank and into his rear and centre, yet the preservation of communication with the main army must always be maintained, or if interrupted, must be regained as soon as possible; and secondly, that the *rôle* of cavalry is essentially to gain information of the enemy's *main* forces, and that it must therefore be kept in close contact with them. In neither of these raids were the cavalry so employed. On the contrary, they were as completely out of touch with the enemy's main forces as they were with their own army. In both cases the raiding cavalry were absent for several days, during which their respective Chiefs were in complete ignorance not only of their movements, but also—and this was the cause of disaster on each occasion—of the enemy's.

To cover and conceal the strategical manœuvres of armies is also one of the most important duties which fall to the lot of the cavalry. This duty is often spoken of as screening, or putting out a cavalry screen, and I think the use of this term has led to some very erroneous ideas on this subject by people who have not considered the matter very deeply. It is popularly supposed that the cavalry screen is formed by a long cordon of small bodies of cavalry drawn across a stretch of country like a line across a blackboard; that it is a mere passive and defensive screen, a mere line of outposts, very often put out along some defensive line at a distance from the enemy.

But this is a very different method from the methods of Napoleon, Jackson, and Stuart, when their cavalry were required to carry out this great duty. They always used their cavalry *actively*; they made use of it to "mystify and mislead" the enemy. The first essential

in using any force *actively* is to push it into contact with the enemy. The second essential is to keep it concentrated as much as possible.

It is very interesting to study Napoleon in 1805 during his advance against Mack at Ulm in regard to his cavalry screening his flank march.

Napoleon, as soon as he learnt that Mack had advanced to Ulm, saw the opportunity offered him of cutting Mack's communications, and thus bringing him to irretrievable ruin. Napoleon therefore did not march direct on Ulm, but struck at a point well in Mack's rear. This necessitated his marching past Mack, and it was essential to the success of this manœuvre that Mack should get no warning of it, and so retire out of the net before it definitely closed on him.

Napoleon also fully realised the danger of Mack boldly attacking him in flank during his march, and a further object of his cavalry screen was to give him ample warning of any such attempt. When Napoleon's main forces were N. and N.W. of Ulm, and it was still impossible for Mack to foresee the real direction of their further moves, which might very well have been direct on Ulm itself, Napoleon pushed Murat down with 4 divisions of cavalry to within 13 to 20 miles north of Ulm, and during his further advance one of these Divisions, Bourcier's, was pushed still closer towards Ulm, and was kept there. This division was directed to push constant reconnaissances towards Ulm, which reconnaissances were to proceed "as far as possible."

The result of this action was, that Mack was not only kept in ignorance of Napoleon's real objective, but was led to believe that the cavalry to the north of Ulm was only the precursor of the main French Army advancing direct on the place.

Here we see no screen put out in the usual acceptance of the word, but a large body of cavalry pushed down *into contact with* the enemy, and kept concentrated, and therefore always acting as a menace to the enemy. This contact was maintained by *active* reconnaissances, and not by a mere passive cordon of posts.

Jackson's methods of using his cavalry for this same purpose were very similar. On the 30th April, 1862, when Jackson started to withdraw his main forces from in front of Banks, in order to concentrate with Johnson for an attack on Milroy, he left his cavalry under Ashby behind, to show a front to Banks. This cavalry was not employed in any way as a passive screen; but on the 29th Ashby made a demonstration in force, and on the 30th he drove the Federal cavalry back on their camps. On the 7th May, the day before Milroy's defeat at McDowell, and when Jackson was 50 miles away as the crow flies and farther by the circuitous roads, Banks was under the impression that Jackson was advancing against him, and was at Harrisonburg. A few days previously he had been firmly convinced that Jackson was retreating to Richmond, but the real nature of Jackson's movement was never even guessed by him. During all this time, Ashby had been *actively* demonstrating against Bank's front.

If we turn to the German cavalry in 1870, it is interesting to note to what extent they complied with the principles we have already touched upon, and to see, superior as their methods of employment were to the French, how far they really were from fulfilling their *rôle*, and how slowly and gradually they arrived at the truth.

The mobilisation of the three German Armies commenced on the 16th July, and in accordance with plans worked out long before, their concentration took place in the Palatinate, in the triangle, Treves-Lauterburg-Mayence. The first point to notice is the organisation and distribution of the cavalry. As already mentioned, the whole of the cavalry were divided up among the three armies, either as divisional cavalry or in 6 divisions and 5 brigades, which were attached to one or other of the three armies. There was no cavalry whatever retained as the special instrument of the headquarters, to be employed under the immediate command of the Chief. These divisions and brigades were distributed as follows:—Attached to the Ist Army was the 3rd Cavalry Division; with the IInd Army were 4 Cavalry Divisions, viz., the 5th, 6th, 12th, and the Guard, and also the 25th Hessian Brigade; and attached to the IIIrd Army were 4 brigades not organised into divisions, viz., a Cuirassier Brigade, a Uhlan Brigade, a Baden and a Würtemberg Brigade, and also the 4th Cavalry Division. That this distribution was faulty has already been noted. Moltke had determined to assume the offensive, and knowing the unpreparedness of the French scheme of mobilisation, he was anxious to make a decisive attack upon the French as soon as possible. With this object, the original points of detraining for the troops had been selected on the left bank of the Rhine, and as far to the front as was consistent with safety, so that there should be no unnecessary delay in the advance. Moltke's first step towards providing this safety, so necessary to enable the concentration of the armies to be completed, was the inadequate method of placing along the frontier a very thin and immobile screen of all arms.

If the 100,000 French, who were available by the end of July, had advanced into the Palatinate, as Derrécagaix suggests, this screen would have been swept aside, and the whole German concentration might have been thrown back on to the right bank of the Rhine. Such a retrograde movement would have been an enormous gain in time for the French, and time, considering the backwardness of their preparation, was all-important for them at this moment.

On the 28th July, nine days after the declaration of war, the whole frontier of the Palatinate was only watched by 3 cavalry and 3 infantry brigades. Both Chabot and Cherfils, French writers who have made a close study of the use of the cavalry during this campaign, point out that the real instrument to provide this safety for the concentration, to secure the liberty of the Chief of manœuvres, and the necessary imformation upon which to base his manœuvres, was the cavalry mass, consisting of 6 divisions and 5 brigades. Yet so far were the Headquarters Staff from realising this, that the cavalry divisions were not the first troops to arrive at the rail-heads, and when they had arrived, they were still retained in rear, and no mass of cavalry was pushed to the front in order to protect and cover the concentration of the armies, or in order to discover what were the French dispositions and intentions.

And what were the consequences of this second misapprehension by the Headquarters Staff of the employment of their cavalry? News reached Berlin, through spies and the generosity (*sic*) of the French Press, that the mass of the French were concentrating at Metz. On account of this, even though it had been foreseen, Moltke feared that an immediate advance of the French might fall upon the isolated heads of the IInd Army before its concentration was complete.

He had taken no steps to ensure his "liberty of manœuvre," nor to get early intelligence, for his weak and passive screen would only stop minor incursions, and it was incapable of pushing reconnaissances far enough through the enemy's advance posts to seek out the truth. It was only a service of security, not one of information. Moltke's frame of mind in consequence passed from bold assurance to anxiety and uncertainty, and on the 23rd July, the IInd Army was ordered to detrain on the Rhine, five or six marches from the frontier.

But if the mass of cavalry at his disposal had been concentrated and thrown across the frontier as soon as it was disposable, it would have discovered the dispositions of the French, and so relieved Moltke of much uncertainty, and allowed the advance to be conducted more in accordance with the actual situation; it would have fallen on the enemy's convoys, and attacked petty detachments, besides surprising and cannonading the larger camps. Such an advance of the cavalry masses would have also in all probability arrested the advance of the French into the Palatinate, which Moltke so dreaded, even if it had been ever intended.

By the 1st August the Ist Army was on the line Treves-Neunkirchen, still covered by a passive screen along the Saare. By the 3rd it had advanced some 12 to 26 miles towards Saarbrücken and Merzig, and during this advance the 3rd Cavalry Division had marched in rear, and on the night of the 3rd it camped between Losheim and Lebach, between two infantry divisions.

So far, this division, then, had entirely failed to carry out its *rôle*. It would have been most usefully employed if it had explored the country between Thionville and Bouzonville. It would then have discovered the presence of the 4th French Corps at Boulay, and seen that there were no signs of the French advancing.

Meanwhile the IInd Army, which was some distance in rear, commenced to advance on 1st August. Its Chief, Prince Frederick Charles, the only one of the three commanders who was a cavalry officer, used his cavalry more in conformity with true principles, for he ordered the 5th and 6th Cavalry Divisions forward to the frontier.

By the 3rd, the 5th Division had its three brigades posted within 16 to 6 miles of the Saare, and the 6th Division was at Klein Ottweiler, about 14 miles from the Saare, both divisions, however, having advanced at the rate of only 12 miles a day. From here the 6th despatched four squadrons on different reconnaissances, which established the fact that Saarbrücken and Sarreguemines were both occupied.

On the 4th the main bodies of both divisions advanced some 6 miles, and various reconnaissances were pushed forward. A large French camp was discovered at Bitche, and a patrol crossing the Saare at Volklingen slipped through the French posts and arrived on the rear of the IInd French Corps at Forbach. It saw a French column moving from Saarbrücken to St. Avold, and returned without further investigation. This report led to the erroneous belief that the French were retreating. On the 5th further reconnaissances were sent out, which established the fact that the camps on the frontier were abandoned, and a movement appeared to be going on from Sarreguemines towards Bitche. During these first days of the war the employment of the cavalry of the IInd Army, though better than the measures adopted in the Ist and IIIrd Army, still fell far from the standard of perfection.

Chabot, whose opinions are freely quoted in the French official account, remarks that, in the first place, more than half of the cavalry available were kept in rear, marching slowly with the infantry columns, who, let it be remembered, were already amply provided with sufficient cavalry for their needs in the way of security. The 12th and the Guard Division and the 25th Brigade should have been pushed to the front as well as the 5th and 6th Divisions, and the 4 divisions might have been formed into one mass in order to break through into the heart of the French concentrations, clear up the situation, and spread alarm and uncertainty in the minds of the French commanders. A favourable line of advance for such an operation would have been round the French left flank and down the valley of the Nied on Bouzonville and Boulay. The 2 divisions (the 5th and 6th) that were sent to the front, although united under command of one man, were not employed in a concentrated mass, but were spread out on a front of 30 to 36 miles; they were forbidden to advance further than within one short march of the frontier, and were actually ordered to perform only the duty of outposts. These divisions were never more than one march ahead of the infantry, and they were kept for several days in the same positions. They in fact performed the duties of the divisional cavalry, while the divisional cavalry did nothing. The reconnaissances that were sent out did not remain in permanent touch with the French, but returned every day to their corps. This resulted in false deductions being arrived at from what they had observed, and the same result will always ensue, if the observation of the enemy is not constant.

During this period, therefore, the German cavalry of the Ist and IInd Armies only provided very superficial and incomplete information, chiefly relating to contact with the French advanced posts, but no serious attempt was made to find out the positions of the French main forces. The cavalry failed therefore to carry out its *rôle*; the information provided was inadequate and not sufficiently precise, and nothing was done to hamper in any way the concentration of the French. But let it be noted that this was not the fault of the cavalry itself, but was the direct consequence of the orders of the army commanders.

The IIIrd Army, to which we have not yet referred, was concentrated between Landau and the Lauter, but neither the 4th Cavalry Division nor any of the 4 brigades attached to it were pushed to the front. The 4th Cavalry Division was in cantonments in rear of the army, and the 4 brigades were attached to certain corps and Divisions, and remained camped with them. Mixed outposts of cavalry and infantry were watching the frontier along the Lauter, and through the agency of these troops the occupation of Weissenburg by the French was known.

The army advanced on the morning of the 4th in several columns, and the only reconnaissance attempted was carried out by the divisional cavalry, who were of course tied to the heads of the infantry columns. Even in this case a large proportion of the divisional squadrons marched in rear.

Owing to bad strategy in pushing forward Douay's Division into Weissenburg, where it was exposed to the attack of 10 divisions, and also to the careless way the French cavalry carried out their reconnaissances on this date, this unfortunate division was crushed by the IIIrd Army after a very gallant resistance. When the moment for

pursuit came, the 4th Cavalry Division was far to the rear, and the officer sent to bring it up did not find it even as far forward as it ought to have been, owing to it having been delayed by finding another army corps marching across its route. In consequence, there was available for pursuit only the divisional cavalry and one brigade attached to the 1st Bavarian Corps. Even out of what there was, one regiment only was pushed on in pursuit, to Sulz, about 8 miles from Weissenburg.

This regiment found Sulz occupied, but not by troops who had been at the fight. It limited itself to this very insufficient reconnaissance, with the result that by that evening all touch with the defeated army had been lost, and the Germans were quite in the dark whether the French had retired on Bitche or Wörth. They were in complete uncertainty also as to the position of Marshal MacMahon's corps.

Force of circumstances then obliged the headquarters of the IIIrd Army to employ their cavalry on sounder principles. The division was ordered to the front at 4 a.m. next day "to *seek for* the enemy in the direction of Hagenau, Suffelnheim, and Roppenheim," and a regiment was to be sent to Reichshoffen.

If one examines the map, one notes that in order to accomplish the object in view, which was to discover the position of MacMahon's corps, or the enemy's main force in this part of the theatre of war, there were only three roads which required to be reconnoitred, viz., those to Hagenau, to Reichshoffen, and to Bitche, for it was scarcely conceivable that the *main forces* of the French could be on the banks of the Rhine. Yet no reconnaissance was directed on Bitche, and reconnaissances were ordered in directions which the strategical situation should have shown were not very important. The reconnaissance of the 4th Division on this day did not result in much. One brigade was directed on Hagenau, where it was stopped by some infantry at a broken bridge, and, not being armed with firearms, the brigade retired, making no further efforts to discover what was the truth, and reported that a large force of infantry was concentrated at Hagenau! which was not true, as the place was only held by a few hundred men. Two squadrons, however, directed on Reichshoffen were fired on from Wörth, and saw the movements of large bodies of troops on the heights in rear. If this body of cavalry had been armed with firearms and had used them as the cavalry six years previously would have done (in the War of Secession), the opposition at Hagenau would have been broken down and the real facts of the case laid bare.

Next day the battle of Wörth took place, during which the 4th Cavalry Division remained in its bivouac, 7 miles in rear! This was the result of orders direct from the IIIrd Army Headquarters, issued certainly, I admit, before it was intended to fight a battle; but what a conception of the employment of cavalry! It was intended to fight a battle on the 7th August with the enemy's forces at Wörth, and the 6th was to have been devoted to swinging the whole army to the right preparatory to the attack. But the information as to the extent of the enemy's position, his numbers, and the features of the ground generally were of the vaguest. During the 6th the cavalry division might well have been employed in advance, getting into touch with the enemy's front, working round his flanks, finding out

where they rested, and if possible working in towards his rear to observe more closely his dispositions.

The study of this, and I may say of all great campaigns, shows us how absolutely necessary an intimate knowledge of the principles of the employment of cavalry is for the successful conduct of war. How far-reaching, in the way of success or in the way of disaster, are the consequences which ensue from the wise or from the stupid employment of this arm.

How often in reading history do we find generals, who did not know how to utilise their cavalry, who either left them behind like impedimenta, or on the other hand, dashed them off in every direction, imposing on them tasks they could not fulfil, with no regard to time or to their numbers or to their necessities.

Cavalry may be well commanded, well officered, well horsed, and numerous, and yet it may achieve nothing, entirely owing to stupid and ignorant orders from the Staff at Headquarters.

It is most necessary therefore for all officers who aspire ever to command armies in the field to thoroughly understand the methods, the limitations, and the temperament of cavalry. It is the most delicate tool in the military workshop, and like all delicate tools, it demands from the man who uses it a thorough and expert knowledge.

Such knowledge is not born in man; it is only acquired by a close and diligent study of military history in peace. All officers therefore, of whatever arm of the Service, should make a special study of the use of cavalry, if we are to obtain from it anything like its full value.

But in order that all the great and important tasks that fall to the lot of cavalry during a campaign may be carried out it must be numerous. Herein lies one of the most serious dangers which will beset our Army in the next great campaign it undertakes, namely, our appalling numerical weakness in cavalry. To give us anything like the proper proportion of cavalry to the other arms, we require at least 8 to 10 more cavalry regiments, and what the nation and her representatives who refuse to bear the cost should never forget is that when "serious dangers beset our Army in the next great campaign," that serious danger will beset the Empire also.

Another important matter demanding the most careful consideration of the Chiefs of Armies and their Headquarters Staff, and therefore in an indirect way, of officers of all arms, who may any day find themselves on the Headquarters Staff, is the economical employment of cavalry. No arm goes to pieces so quickly if the horses are exposed to great hardships, or is so hard to re-form. Horses can make a great effort for short periods, but like all animals they require food, and at times rest. These two requirements it must be the special study of the Headquarters Staff to see that they get.

It cannot be too often repeated that if you want to make use of your cavalry and not to destroy it, it is necessary, within judicious limits, to be most *miserly* in its use, never to employ a brigade when a squadron would suffice, never a squadron when a troop will do as well. Cavalry should only be employed when there is some *useful* object it can fulfil, and to attain this object only the absolutely necessary force should be employed.

This arm must be prepared to suffer quite as large a proportion of loss as the rest of the army in battle, but every effort must be made to prevent loss from unnecessary work, starvation, and exposure,

which, to a large extent preventible causes, have resulted in the destruction of the cavalry of an army far oftener than has direct loss from bullets.

Colonel LONSDALE HALE (late R.E.):—My friend the lecturer had hardly finished his manuscript before he had to go away from the Staff College to foreign battle-fields, with a party of Staff College officers, and therefore he asked me to undertake the work, which was purely mechanical, and which I willingly undertook, of passing his lecture through the press. The result is, that I have read the lecture about three times, and the more I have read it, the more I have liked it, and perhaps I have noticed some things in it which hearers or readers of it for the first time might not detect. I must congratulate my friend, in the first place, on his powers of bitter irony and sarcasm. If you will turn to his lecture, towards the end, you will see he says:—"It is most necessary therefore for all officers who aspire ever to command armies in the field to thoroughly understand the methods, the limitations, and the temperament of Cavalry. It is the most delicate tool in the military workshop, and like all delicate tools, it demands from the man who uses it a thorough and expert knowledge. Such knowledge is not born in man; it is only acquired by a close and diligent study of military history in peace. All officers, therefore, of whatever arm of the Service, should make a special study of the use of Cavalry, if we are to obtain from it anything like its full value." Then, if you will turn back towards the beginning of the lecture you will see the author calmly tells the truth, that "Continental writers have made a close study of the strategical employment of Cavalry; but I do not know of one book, written in English, dealing with this most important matter." That is exactly it, Sir; that is exactly where we fail. About ten years ago there came into power a school of instructors, who stated that the proper way to instruct the British Army was by the inculcation of principles only. Teach men principles, and leave them to apply them themselves. I am the oldest teacher in the Army, not a D.A.G. for Instruction, but a common teacher, and I have been a teacher for many years, and I say that you will never teach anything by principles alone. You do not teach a man to drive a locomotive by telling him the principles. You must give concrete instances. The only way in which Cavalry officers can understand the working of this delicate machine is, by studying concrete instances of it—that is the only way. I speak from my own personal study and many years' experience in this matter. If you want to grow old prematurely, try and trace out the work of a Cavalry division in all its ramifications in war-time, down to the delicate springs the author has referred to. It not only requires enormous labour, but it requires a great amount of patience, and an aptitude for study. I will give my Cavalry friends the credit for possessing all that, but it wants more; it wants at the same time a command of two foreign languages, French and German. Even in the account of the work of a German Cavalry division you may not find sufficient details; you will have to take the regimental history and work away at all the patrols until you get what you want. My friend the lecturer says "go and read." It is all very well for him to say "go and read," but how is the British officer to get hold of the documents? Colonel Gough and I at the Staff College can obtain the documents in the library there, but how is the British Cavalry officer to study and understand the working of this delicate machine when he has not the materials; and if he has not the command of two foreign

languages, how can he make anything out of the materials even if he has them? I hold there has been a mistake on the part of the military authorities hitherto. I am speaking of the period prior to the South African War, when I say the honest truth is, that the military authorities did not believe in Cavalry; they had no sympathy with it. There was one great exception, Field-Marshal Sir Evelyn Wood; but if the others believed in or sympathised with Cavalry, all I can say is, that they kept their feelings remarkably under control. In old days, no Inspector-General of Cavalry had the ear of the War Office, until Sir George Luck came, and he was the first Inspector-General who was ever listened to by the authorities at the War Office. Had the authorities known about Cavalry, or understood it, they would have deputed somebody to have drawn up the account of the working of the machine, with all its delicate springs, and would have spread it broadcast amongst the Cavalry. Perhaps, Sir, you may have a possibility of exercising more influence, and therefore I say, until you have that done—not the achievements of Cavalry in the field, nothing of that sort—we can learn all about charges everywhere; but until you have English books drawn up, giving an account in the minutest detail, of how the Cavalry perform all their important work in the Service, the British Cavalry officer cannot be expected to understand the working of the machine which it rests with him to work. The only thing is to provide the British officer with these detailed accounts, and let him study them. But even if you do that there is one class of officer in the Cavalry that I do not think can, by any possibility, be raised to the discharge of the responsibilities which may fall upon them. I use the word "may," not "do," because sometimes the responsibilities do not; but they may; and these are the young officers in the Cavalry. I do not know how the Cavalry subalterns are to be raised to the level of discharging those responsibilities which may ultimately fall upon them. I have to say this as a matter of etiquette to you, Sir, personally, but you known all about it. A Cavalry subaltern is sent out in front of an army with three or four troopers, and he is told to find out all about the enemy. If he is lucky, he may come across the enemy and get hold of a certain amount of data, although imperfect. On these data he has to form a conclusion as to what the enemy is doing, and that conclusion he has to send to his Colonel or General behind, and on that the commanding officer, perhaps, bases his orders. It requires not merely the power of close observation. What is the good of officers knowing all these things unless they understand them? The officer must have an understanding of the phenomena which come before his eyes. Let me take a case. I have already published it in a book; but it will not matter my repeating it, because nobody has read the book. Let me take the case of Lieutenant von Busse, of the 6th Cavalry Divison. He was sent out in front of the Grand Duke of Mecklenburg-Schwerin's Detachment (*Armee-Abtheilung*) to find out about the French. He was a brave young fellow, and rode forward with ten men, and entered the town of Chateaudun, and found a large body of French of all arms. He made his way out of the town, and after losing four men, got back to a wood at night, and said to himself: "I will stop here for the night, and I will send in my report to-morrow after having looked again." That was the failure. Had he known the strategical situation he might have said: "What on earth is the meaning of this great body of French troops here? Are they all going north to intervene between our Army and the Second Army, or are they going south, or are they stationary?" At all events, if he

had had the strategical situation in his mind he would have seen that the mere fact of a large body of all arms being there was of the utmost importance, and the information should be sent back to his commander as quickly as possible. But he did not do that. He said: "I will wait until to-morrow morning." What was the result of this young officer not grasping the situation? The Grand Duke commanding the army behind had heard of a body of troops marching north, and our young lieutenant had hit on the main body due east of his own army. If the lieutenant's report had gone in that night, the Grand Duke might have marched due east the next morning, and perhaps have swept that corps off the ground. As it was, owing to the delay of the young officer and his not realising the importance of the position, the Grand Duke marched north-east, and the whole of the enemy escaped him. I may mention another case, which fortunately did not end in evil results. It was told to me by a Bavarian Cavalry officer, who was driving out with me when I was taking a friend to see the battle-fields on the east side of the Moselle at Metz. My friend stopped the carriage and said: "I must tell you what took place here with regard to a subaltern of one of our Cavalry regiments." He named a crack regiment of that time, not merely socially distinguished, but also extremely efficient. He said that at the time—just the time the lecturer has spoken of—the First Army were advancing south towards Metz, the Second Army was coming through the Vosges south-west towards Metz, and the Third Army were going straight west. It was of the utmost importance to them to know whether the French were still on the east side of the Moselle, and ready to receive them for battle. If so, they must close up their columns before they attacked them. If, on the other hand, the French had gone already, making for Verdun, they must go on as hard as they could, regardless of everything. This young subaltern was sent out. He looked around him, and kept his eyes and ears open, and came to the conclusion that the French Army had gone. Just think of the momentous result of that report. Everybody would skurry on. Fortunately he had at some distance in the rear, the commander of the Cavalry Squadron, and the report had to go through him. He must have been an older man, and had possibly seen war in 1866. He came up and he looked at the indications which had presented themselves to the subaltern, and he came to the right and proper conclusion that the French Army was there, ready to receive the Germans at any moment, and he sent that information back. But the way he treated the subaltern was remarkable. He did not condemn him to that place which traditionally is the hottest place in the universe; he did not condemn him at all. He simply turned round to him and said: "The information which you have given us, that there is no French Army here, is of the utmost importance, of vital importance, most intensely valuable, so valuable that you and I will not let anyone else share it; we will keep it to ourselves, and not send it on." Therefore, it did not go on. No, to meet the possible responsibilities old heads are needed, and rarely is the old head to be found on the young shoulders of any subaltern. There is another point I should like to touch upon, and that is with regard to hanging on to the enemy. I know nothing about the South African War or about India, but we do find over and over again that Cavalry do not hang on even when they are in pursuit of, or trying to find, the enemy. Even von Schmidt, who was the only Cavalry general I think the Germans say the war produced, once lost touch with the enemy. But my friend, General von Wright, who commanded the Cavalry Division at Metz, an

Englishman, told me an anecdote of von Schmidt which illustrates the spirit that should animate Cavalry in pursuit of the enemy. Von Schmidt had an awkward habit of turning out at night and going round the pickets and vedettes, and one night, when the enemy was supposed to be in front, he rode up to the picket and said to the picket commander: "Do you know anything about the enemy?" "No, sir." "Have you heard anything of the enemy?" "No, sir." "You do not know where he is?" "No, sir." "Very well, get on your horse and ride with me and take me to the vedette." There he repeated the same questions: "Do you know where the enemy is?" "No, sir." "Heard anything of him?" "No, sir." "You know nothing about him?" "No, sir." "Well, you ride on with me." They rode away into the darkness, and presently, bang, bang, a couple of chassepots whistled by the three of them. He turned round to the officer and said: "Young man, the next time I come to your picket and you know nothing about the enemy or where he is, I will have you tried by court-martial and turned out of the Service." He turned round to the vedette and said: "Young man, next time you give me those answers I will have you shot." I maintain that that is the true spirit of Cavalry officers. There is one other point I am very anxious to bring to your notice, and to the notice of the senior officers present. The question is: Will you have, with the Cavalry Division, infantry? I will not raise the question of mounted infantry, but infantry attached to it as part of the Cavalry Division. If anybody says "yes" or "no," I would ask at once the reason for the faith within them, and that would rather puzzle them, I think. This question was raised after the war of 1870 or 1871. There was an enormous amount of military literature published on the subject, some saying that you ought to have infantry with you, and others that you ought not. In the year 1889, it was considered desirable to sum up the discussion, and a long article appeared in the *Militär-Wochenblatt*, and there the writer, who dealt with the 4th, 5th, and 6th Cavalry Divisions in the second period of the war, came to the conclusion that you ought not to have infantry except under very exceptional circumstances; that if you have infantry you must have a great number of them to be of any use, and then the result was, that you had your mobility diminished. But he did not go into a later period of the war after the battle of le Mans. In January, after the battle, a large force with the 4th Cavalry Division went towards Alençon. The 4th Cavalry Division was on the exposed flank. They got into close country, and the division did not know whether it was likely it would be attacked from the west, or the north, or from the east. The men were employed all day long in reconnaissance in this difficult country. At night they had to set strong outposts, and the consequence was they were working by night as well as day, and the result was that the men, not the horses, were knocked up. The general sent back for a battalion of infantry, the 44th Regiment, and when these came up, the outpost night work of the Cavalry ceased. The infantry were employed simply and solely for outpost picket duty at night. I am sorry to say, I do not see here my old friend of the Mounted Infantry; I had hoped he would be here for me to give him one. He would say: "I wish I had been there. I would have gone with my 600 men and horses." That is not what they wanted. They were very short of forage in that country, and they did not want 600 more horses. They brought these men over in wagons, four horses to twelve men, or in carts, two horses to six men, or one horse to every three men. In certain situations, it is a question whether an infantry

battalion would not be useful. There is one sentence in the lecture that had burned itself into my mind, and if you will allow me, Sir, I will address it not to you, but to the young cavalry officers who are in the audience. I have known cavalry officers for a long time, and have been associated with them in manœuvres and that sort of thing, and I am going to read you a bit of a lecture. I do not know what your brains are like. There may be a weak point in them, as there is a weak point, one out of many, in this old skull of mine. When a thing is spoken to me or I hear of it, I am very slow to realise it, but when I do realise it, I get the thing pretty tight. On the occasion of reading this lecture for the first time, I do not think I realised one sentence, and therefore I will read it to you, and I will read it slowly, so that you may listen to it and take it in. "Cavalry employed on that great strategical *rôle* are now able to be entirely independent of the infantry marching columns in the rear. Owing to their being equipped with a good fire-arm, and trained to use it, they are as powerful as the infantry for attack, and as a mass of Cavalry will always have guns with them, a Cavalry Division must henceforth be regarded as a very mobile unit, combining the powers offensive as well as defensive of the three arms." Do you understand what that means, gentlemen? Do you realise what that Cavalry Division means? It is the creation of a unit of which there does not exist, so far as I know, any parallel in the wars of past days. The Cavalry Division of the future combines in itself not only the powers of Cavalry, but the powers of Infantry and Artillery, and if you allow us Sappers to call ourselves the fourth arm, it combines the powers of the fourth arm as well. Just think of the power of that new unit! Take a concrete case. To the Cavalry Division very late at night comes a very simple order. "The main body of the enemy is known to be collected at A. Between you and A, at B, is a hostile force of all arms." Then comes the order: "Go to A and learn all about the enemy; destroy the force of B on your way." Nothing simpler than those orders. The Cavalry Division has to do it. How is the Cavalry Division to do it? It starts early in the morning, sending out scouts, and to the commander on the march comes in the report: "We have had to swim this river, the bridge is broken, there are plenty of materials to repair." There is no need to call on "mounted sappers" to do the work. Men of the Cavalry Division, "the cavalry pioneers," will go forward, repair the bridge, and make their own path. The Division goes on and arrives near the position of the enemy, and the general, knowing the position, determines on a combined frontal and flank attack. Yes, a flank attack; but time is of the greatest importance, and usually a flank attack means a long and weary journey for the out-flanking force, and keeping also touch with it. Here, however, is the flank attack ready in the minimum of time. A portion of the Division is sent off by various and hidden roads as fast as the horses' legs can move, dropping as it goes its own relays of troopers to keep up communication, and to notify to the general its progress. And when all is ready, soldiers on foot, aided by guns, advance to the attack. Yes, but the soldiers on foot and the guns are parts of the Division itself; the men are merely off their horses, not on them. And now the general sees that his frontal attack is gaining ground; Cavalry Division orderlies bring him at mad gallop equally good news from the distant flank. Gradually the attack is pressed on, and the enemy waver, and at last seem to break. Then comes the cry: "Where is the Cavalry?" Not miles away! as so often we hear of in past battles. They are the very

men who have attacked. Up come their horses, and away they go and the enemy is destroyed. Think of that, you Cavalry colonels; think what you have to work up to! Try and realise the glory of commanding a force that has the powers of all the arms to do everything independent of the other arms! Think of it, and see whether you will not train your pioneers, your young subalterns, your squadron leaders, to meet every single emergency to fulfil every single duty that may fall upon them. Talk about the day of Cavalry being past! The day of Cavalry has just come, it lies before you in the immediate future, now that you have a firearm, and are not too proud to get down and use it. You have your infantry, your Sappers, your Artillery, your Cavalry. Talk of a *corps d'élite*. The *corps d'élite* of every army in the future will be the Cavalry Division of the army to which it belongs.

The CHAIRMAN (Major-General R. S. S. Baden-Powell, C.B.):—It now becomes my painful duty to say a few words myself, as Colonel Gough has nothing to add to what he has said. I must say we have all enjoyed very much the stimulating vision which Colonel Lonsdale Hale has so eloquently put before us, of the great engine of war that Cavalry is now likely to be. The drawback is, that for the moment it is a vision only, because we have not the numbers necessary. We can only hope that they will come in time. The lecturer has given us a very able exposition of the great value of Cavalry, and of its importance in the battle-field, provided, firstly, that it is well led, that is, that its leaders know their business; and secondly, that it is properly employed; that is to say, that the Commander-in-Chief of the army which uses it knows the value of his Cavalry, and how to use it, understands its capabilities, and has the sense to give its leader a free hand when he has once given him the object of his work. Colonel Gough remarks, that Cavalry is the strategic arm, while Infantry and Artillery are tactical. Modern battles, as we see in the campaign now going on, have grown from being merely a day's tactical operations, into a series of strategical moves of several days' duration over a wide extent of country. Thus, Cavalry being a strategical arm, comes to be of far greater value than it ever was before. This form of action demands very accurate reconnaissance, and a very constant stream of information over wide tracts of country, and involves wide turning movements on the part of a mounted force—of a greater width than was ever before the case. Therefore, Cavalry has a value it never had before in helping the sister arms to win the battle. It is not the Cavalry that wins battles; the Infantry is the backbone of the whole thing; but Cavalry has its duties in helping the Infantry, and those are principally: firstly, the art of discovering, or reconnaissance; secondly, the clearing away of the enemy's Cavalry from the front and flanks; and, thirdly, raids and enterprises. (When I talk of raids I do not mean the very flash dashes that we have been accustomed to see at various times, which are generally aimless, raids such as the lecturer was referring to, as taking place at the important period about Chancellorsville and Gettysburg, and raids such as we have seen by De Wet in the Orange River Colony, and before that, in the rebellion of 1798 in Ireland, where Joseph Holt was exactly a prototype of De Wet. And perhaps, in this Manchurian campaign, Menchikow's dashes were aimless raids without any effect, beyond the destruction of a number of horses. What we want are well thought-out raids, with a real design about them, and then they become of enormous value to the army. Taking a smaller scale, the very last example was that of the Japanese Cavalry making

its dash to Sin-min-ting.) The fourth duty the Cavalry has in helping its sister Services is that of pursuit, which, to my mind, is one of the most important of all, because without Cavalry it is possible for Infantry and Artillery to win victories; but without Cavalry it is utterly impossible for them to effect the absolute defeat of the enemy. If anybody could make defeat possible without the aid of Cavalry, I think the Japanese were the men to do it, but they have acknowledged to their regret that they had not sufficient force of Cavalry to make their victories into real defeats for the enemy. Had they had cavalry at Liao-Yang, it would not have been merely a victory, it might have been a disaster for Russia. Had they had Cavalry at Mukden, it would have been something more than a big defeat; it might have been annihilation; it would have been a second Sedan, or a Paardeberg on a very large scale. From the financial point of view, the cost of the extra Cavalry in peace-time would have thus caused a saving of many millions of war expenses. But I do not like preaching merely from one campaign, as an instance, because what I have said is a truism that goes back all through the history of Cavalry to the days of Xenophon, when he wrote the memorable words: "An army without Cavalry profits nothing by its victories, and loses all when defeated." The Japanese realise this very fully. The loss they have suffered from the want of Cavalry has been great. Cavalry, like the fleet, is not a thing you can organise suddenly. It must be "in being" at the time the war breaks out. It it not a thing that can be improvised at any time. Even although Infantry may be improvised during war behind the first line, as is being done now, yet Cavalry cannot be improvised during war, because its main work comes the very first day that war occurs. It is at the outset that you want *all* your Cavalry, and therefore, it has to be prepared in peace-time. Again, we must not be led into the error of thinking that improvised corps of volunteers, however willing, are any use as Cavalry at first. They cannot be used to supply the place of Cavalry that is deficient in numbers and quality. We have innumerable instances of this, both in our own campaign in South Africa, and in the very similar campaign of the American War of Secession. These gave us convincing proofs that it does not do to use improvised, irregular, or volunteer Cavalry, in the place of real Cavalry, trained in peace-time in the art of war. The Germans now are realising, after all their study, that Cavalry is required more than ever; to their 485 squadrons, they are now adding 28 new ones, and the proportion they thus make with Cavalry as composed with Infantry, is about 5 squadrons to every six battalions of Infantry. France has about 3 squadrons to every 5 battalions; Russia has 7 squadrons to every 12 battalions; and our proportion is about 9 squadrons to 22 battalions. That is a very small proportion; not half what it should be. Then, again, our strength in units is so much below the others. A regiment of Cavalry with us comprises 3 squadrons. There is no other country in the world that has less than 4, and most of them have 5 or 6. Again, a division with us includes 18 squadrons. With everybody else, 30 to 36, nearly double the number. The Artillery in England, as in other countries, has been increased very largely of late, to meet the modern requirements of war. The Cavalry, which, in other countries, has been similarly increased, remains with us smaller than it was in the time of the Peninsula; but I think its turn is now coming. It really ought to be increased. Mounted Infantry can do a great deal to relieve Cavalry from the work, as Divisional Mounted Troops, of "covering"

the army, and so release it to carry out the advanced work of "discovering" which the lecturer spoke of; but even so, a large deficiency still remains in the strength of the Cavalry, which ought to be made up. I believe it could be begun at once by giving us a fourth squadron for every regiment, and by restoring to their place in the line the two grand old regiments, the 22nd and 23rd Light Dragoons. When we ask for more Cavalry, two objections are hurled at us. One is, that we cannot get officers for the regiments we have. I look on that as a very temporary matter, because if you look back in history, you will see that such shortage is what occurred after the Waterloo campaign, after the Mutiny, and now again, after the South African War; and, I think, that with proper consideration given to the subject, as is being given now by a Committee, we shall find a way out of it, and a way of making the Service more acceptable to young officers. The examinations rather frighten them at present, and the pay and prospects are not so good as they might be; but doubtless that will be all looked into by the Committee. Also, parents seem unaware that an allowance of £300 will suffice to keep their son in any regiment. Again, the great cost of extra Cavalry is very much cavilled at. But we are apt to neglect to consider the great and grave danger that exists for this country. Although we get reassuring accounts from our statesmen and others, it is as well to read between the lines, and when one does so I must say it is a very gloomy picture to look forward to. We have always to prepare for the *possibility* of what may happen, even though it may seem improbable. When we consider that grave danger that is possible to this country, we ought to throw aside questions of expense. "It is better to spend in gaining strength than to be wealthy—and weak." I have, perhaps, had better opportunities than most people here present during the last few months of comparing our Cavalry with those abroad, because I have had the good fortune to go round a good many of them, and I have seen the interior working of our own, and I can conscientiously say, that we are not very far behind in respect of quality and efficiency, although we are so in quantity. If we go on, at any rate, at the pace at which we are going on in Ireland, I think that after a very short time, we shall be able to say that we are not behind any of them. At least, I hope so. But in numbers, and in proportion to other arms, we are certainly dangerously small, and this is a fact which our fellow-countrymen will have to realise sooner or later, and the sooner the better for the national security of our country. Our thanks are due to the lecturer for bringing this subject forward so very ably, and for putting his facts before us in such a very clear and interesting manner. I am rather an amateur at this business, and have never presided here before; but I know it is usual for the lecturer, in having a vote of thanks accorded to him, to rise and thank his audience with becoming modesty: but, I think, it would be better if he not only thanked us in words, but showed his appreciation by coming again and giving us another lecture in continuation of the same subject later on. I move a hearty vote of thanks to the lecturer for his kind service this afternoon.

A TRAINING SERVICE FOR THE MERCANTILE MARINE.

By Lieutenant H. T. A. BOSANQUET, R.N. (Retired).

Thursday, 11th May, 1905.

Commander W. F. Caborne, C.B., R.N.R., in the Chair.

THE question of training boys for service in the Mercantile Marine has been so frequently discussed that some apology would seem to be necessary for again bringing it forward; the writer must, however, plead in excuse the importance of the subject, and the fact that though much has been said, nothing has yet been done in the matter. Until some steps are taken to bring about what is desired, the question surely must not be allowed to drop out of sight.

The presence of some 40,000 foreign seamen in the British merchant service—a number which is steadily on the increase—has drawn much criticism upon the manning of this industry, and the remedies proposed to bring about the substitution of British-born seamen for these foreigners have been legion. To some their presence is a matter of no concern; to others it is a "grave national danger," and no words are too strong to express their disapproval. Will it not be well to take a middle course, which is adopted by those holding more moderate views, and take it for granted that it is highly undesirable to have so many foreigners occupying good berths in so valuable and important an industry, when there are thousands of our own people out of employment? Surely no one will be found to disagree with this point of view, and we can proceed to discuss schemes for the elimination of the foreign seaman, feeling certain of universal support.

The explanation why so much has been said and so little done in this matter is possibly that nearly all the schemes put forward involve a large expenditure of public money, and no Government will be found prepared to undertake to ask for the ways and means. In this paper it is proposed merely to carry out an alteration and addition to existing Institutions without involving any great outlay, so that the ball may be started rolling in the right direction. If it succeeds, then let the plan be followed up and expanded as may be required; if it fails, it can be dropped, and little harm is done.

The cause of the falling off in the number of British-born seamen is not due to the fact that our boys and young men have lost their taste for the sea, and do not offer themselves to the same extent as formerly. There is no dearth of recruits. The decrease is due partly to the fact that of the volunteers for a sea life, the Royal Navy absorbs a larger proportion than formerly, and the remainder find so many difficulties in the way of getting sea employment that they have to give up the idea and take to work on shore. Of those who go to sea, the majority throw it up after a short time, disgusted with the conditions which they find prevailing, and preferring land occupations,

where the life is not so hard and employment more regular. It is the want of some recruiting and training service which accounts for the loss of would-be recruits, and at the same time, for the shipowners taking foreigners in preference to British-born youths. For the foreigner comes a ready-made article, trained in his own country's merchant navy, and only too glad to accept the conditions offered in the British service, which, if bad, are certainly better than those to which he has been accustomed. The shipowner, in consequence, so long as he can get his work done by the trained foreigner, will not go to the expense and trouble of teaching British boys their trade simply out of patriotism.

Any scheme devised for remedying the existing state of affairs must provide for the recruiting of desirable boys and their preliminary training, so that the shipowner may be offered the ready-made article of home production. Such scheme must go further in making it advantageous for the shipowner to give preference to British seamen or boys over those of other nationalities, and this advantage must also be sufficient to induce him to improve the conditions of life in his ships in order to retain British seamen in his service. To pour recruits in under present conditions is to try to fill a basin with a hole in it, for as fast as new boys are sent in the older ones retire just as they are on the point of becoming useful. Any training scheme must go hand-in-glove with a plan for making a seaman's life more attractive.

The boy sailor question involves three separate interests—the Government, the shipowner, and the boy. It is necessary for any scheme to be a success that these three interests should work together.

The Government requires British seamen for the Royal Naval Reserve; the shipowner desires that work on board his ships may be carried out as cheaply as possible, and is indifferent to the medium employed, provided the work is done efficiently; the boy has his future to consider, and will calculate whether the prospects offered are good enough, and whether it is worth his while to make the sea his profession. In the background are the boy's parents—a factor not to be neglected—who are personally interested in the matter of the boy's wages.

The two most recent schemes for raising boy sailors have failed, since no attempt at the above combination has been attempted. The Board of Trade scheme of March, 1899, held out certain inducements to the shipowner to take British boys. The shipowner replied by attempting, on the cheap, to attract boys by means of a scheme put forward by the Shipping Federation in June, 1901.

The Board of Trade scheme was, briefly: shipowners to be allowed a reduction equal to 20 per cent. of the light dues paid in any one year for a certain number of boy sailors carried, these boys being required to be enrolled in the Probationer Class of the R.N.R.

No special advantages were offered to the boys, except that on attaining the age of 18 they became eligible to join the "Seaman" Class of the R.N.R., provided they had been at sea for two years.

This scheme failed because (as stated in Board of Trade Memo. 22405) the inducement offered to the shipowner, *i.e.*, the reduction of light dues, was insufficient. The shipowner saw no point in having a reduction made in dues which he considered he should not at any time be called upon to pay, and the reduction worked so irregularly as to be worthy of no consideration in certain classes of ships. In this

scheme the shipowner was to benefit directly by a reduction of dues, and the Government indirectly by the expected increase of recruits for the R.N.R.

The effect of the proposal made by the Shipping Federation, in response to this Board of Trade offer, was that the shipowner should benefit but at the serious expense of the boy. An endeavour was made to attract boys to sea and retain them there for three or four years at a cheap rate, so that the reduction of dues might be secured. The boys were invited to bind themselves for certain periods at low rates of wage, and were offered at the end of their term no advantages whatever over those boy sailors who had not so bound themselves but had gone to sea in the ordinary way, these last, moreover, being able to draw the current rate of wages unfettered by indentures. The boys and their parents were in most cases far-seeing enough to refuse to consider this scheme, and in consequence of their lack of co-operation the plan may be said to have failed.

Under this scheme a boy desirous of going to sea in the merchant service was invited to become an apprentice, or a boy sailor; apprentices to serve for 3 or 4 years with pay during the period of £30 to £50, with a gratuity of £5 to £10 at the end; boy sailors to serve for 3 years, with pay of 12s. per month at starting, rising to 30s., and a gratuity of £5 at the end of their service.

Age in both cases, 15¼—18, with height and chest measurement standards; apprentices to be berthed apart from the crew.

The Board of Trade scheme of 1899 having failed, another one has been recently put forward by the Board of Trade and the Admiralty with the object of raising R.N.R. seamen. Though the plan has been withdrawn almost at its birth, and in its original form will not again see the light, still it is worth while considering it as proposed, since the ideas of the Government are expressed in it, and will probably appear in somewhat similar form in any fresh scheme.

The main features were as follows:—

Inducements to the Shipowner.

A grant of £10 to be paid to the shipowner for every R.N.R. boy carried at the end of his first year of training, and a further £5 at the end of each boy's second year.

Terms for the Boys.

1. Boys to be apprenticed to the shipowner for 3 years, with a probationary period of 6 months; to be enrolled in the Probationer Class of the R.N.R. and undertake to join the "Seaman" Class on completion of indentures; apprentices to be berthed apart from the crew.
2. Pay: first year, £8; second year, £12; third year, £15. An outfit at starting to be provided by the master up to a value of £4, and the Government to provide a further outfit at the end of the first year to the value of 25s.; a small retainer to be paid quarterly, equal to 5s. per quarter, for the first year, 7s. 6d. during second year, 10s. during third year. A bonus of 30s. on joining "Seaman" Class.

   Candidates on entry to be between the ages of 15—17½, and of a certain standard of height and chest measurement.

The first thing that strikes one on considering these proposals is, so far as the boys are concerned, their similarity to the Shipping Federation scheme previously mentioned. The pay and prospects of the boys, and their qualifications on entry, are almost identically the same as in the Federation scheme. Seeing that this last proved a failure from the boys' point of view, why should there have been any more probability of success for the new plan? The scheme, however, has never reached the boys, and has fallen to the ground because the shipowners object to finding the £4 outfit. They will have no boys unless it is a clear case of gain for them at every point. Is it unreasonable to feel some disgust at the action of the shipowners for haggling over a point like this in a scheme which is all to their benefit? And is it permissible to wonder whether any of them have ever heard of the word patriotism? We are truly a nation of shopkeepers, when a difference of this magnitude is allowed to completely knock on the head a scheme which, if it succeeded, would be of the greatest benefit to the country at large.

The scheme is worth some consideration, and has redeeming points. It is of course essential that the boy sailor should be bound to the sea for a certain period, and that he should not be free to throw up the life, just when the fancy takes him, after much money and time have been expended on his training. Some sort of apprenticeship must therefore be necessary. Again, the terms offered to the shipowner would appear to outsiders to be liberal, and should satisfy people of a less grasping nature; but the conditions on which the boy is invited to bind himself are not worthy of consideration. It is highly desirable, as said before, that some means should be devised whereby the boy may be bound to the sea for a certain period; but it should be clearly understood that the old system of apprenticeship, which it has been proposed to resuscitate, is obsolete. Sailing-ships are few in number in the Merchant Service, and are in decreasing quantity. In the old days when boys were apprenticed and served in sailing ships, they had much to learn, and three or four years was none too long a time in which to pick up their duties. In those days, too, foreign competition was a negligible quantity, and there was a reasonable probability of an apprentice finding immediate and constant employment on completion of his indentures. Boys who were apprenticed consequently entered upon a life with an assured future in front of them. The apprenticeship system was, moreover, universal throughout the service, which is not the case now, and under our present free trade regulations never will be.

At the present day steam-ships predominate in the Mercantile Marine, and are the only vessels to be found in the largest and most important mail-carrying companies, which will be the most tempting bait for all good seamen. The percentage of steam-ships increases yearly. In these vessels any boy of ordinary capacity should be able to pick up his duties in 12 months at the outside and in most cases 6 months would suffice. It is therefore ridiculous to bind a boy, with no power of rising in his rating, for a space of three or more years. Boys thus bound will soon discover this fact for themselves, and will speedily become discontented. Unless the apprenticeship system now proposed becomes universal throughout the Merchant Navy, the old objection to the system comes to the front once more, which is that a boy finds himself bound for a fixed period at a low rate of wage with no possible increase, whilst his school mate, or town mate, signs

articles for a voyage only, and has every chance of a rise of salary or rating according to his ability and energy. This difference in condition was in great part responsible for the many desertions which took place amongst apprentices after the repeal of the Navigation Laws in 1848, when the system ceased to be universal. The Shipping Federation in their 1901 scheme foresaw this, and in a letter to the Press the general manager explained that each lad would be photographed at starting, so as to be more easily recaptured, should he desert at any time. It is hardly an auspicious commencement of a boy's career as a sailor for him to be told that, in anticipation of his committing an offence, he must be photographed for the purpose of identity, and he could hardly think the life a promising one if the temptation to desert was so probable as to justify such a precaution

That the boys or their parents would have been dissatisfied with the wages offered there can be no doubt whatever. For the first year they were to receive 13s. 4d. per month, and during the second year £1 a month. At the present time boys are dissatisfied unless they get at least £1 per month at starting, seeing that a well-grown lad can often ship as an O.S. at £2 10s. a month on his first voyage. Any apprenticeship scheme proposed, if it is to be a success, must be devised so that a boy's wage-earning power and advancement in rating are not restricted. The wages and other inducements offered must be at least equal to, and preferably should be superior to, those offered in occupations on shore, in order that some benefits may be gained by undertaking the hardships of a sea life. Finally, the boy and his parents must have some assurance of a settled future, which in all these schemes seems, so far, to have been overlooked. After the completion of a boy's indentures and he becomes a seaman he will have to face the competition of the foreigner, is engaged for one voyage only, and at the end of each has to struggle for a fresh berth. Unless the present difficulty of non-continuity of employment is got over, no scheme can be more than a temporary success.

Another objection that arises is that no provision was made for boys who wished to do so joining the Royal Navy when eligible. A great many boys now go to sea in the Merchant Service merely to fill up the time until they are old or developed enough to enter the Navy. These boys will not bind themselves apprentices in the Merchant Service if they are thus altogether cut off from entering the Navy. It is possible that boys ineligible to enter the Navy might have considered the scheme; but since the age and height standards laid down were almost exactly the same as the normal naval ones, only boys who were equally eligible to enter the Royal Navy would have been accepted. Is it probable that any great number of these boys, able to weigh the relative advantages of the two services, would decide in favour of the Mercantile Marine?

The Government by this plan of subsidising the shipowner and encouraging him to take boys, hope thus to obtain a supply of Naval Reserve seamen. Is this likely to be the case if some special advantages are not offered to the shipowner to carry Reserve *men*? It is perfectly useless to encourage the entry of boys and to bind them to sea for three years if, at the end of that time, the existing state of things continues. Only a small proportion of the apprenticed boys, on completing their indentures, will be able to find employment in the liners, and the remainder will have to serve in tramps, where

the greater part of the crews will be foreigners. As many British seamen object to the presence of the foreigner, it is probable that most of the apprentices, at the end of their indentures, will give up the sea altogether if unable to serve in liners. The Government will thus be paying the shipowner for training up Naval Reserve men, who will leave the sea before they are of any use. Would it not be well for the Government to consider a grant to such ships as carry above a certain percentage of fully qualified Naval Reserve *men*?

A final objection to the scheme is the method of raising boys. It was proposed to carry out the Shipping Federation plan of registering the names of volunteers and taking them in rotation as vacancies occurred. The boys would then go straight to sea and have the option of throwing up the life at the end of the first six months. It is probable that a large percentage of the boys would elect to leave at the end of this period, and a wastage would occur of something like 50 or 60 per cent. rather than the 20 per cent. calculated.

The majority of the boys who volunteer to go to sea have no idea whatever of the career they are entering upon, and it is a rude shock to most of them when they first experience the meaning of a sailor's life. If these boys go straight to sea they are disgusted with the life at first starting off—a dislike which they never get over. On the other hand, if they are gradually weaned from shore to ship by easy stages they get accustomed to the life and turn out good seamen. Moreover, the average boy when taken straight from the shore is wanting in habits of order, cleanliness, and discipline, and it is desirable that he should commence in possession of these three important qualifications. The ordinary ships in the Merchant Service cannot spare instructors to give the requisite time and attention to training boys in these particulars, and in consequence, unless the boys receive instruction of some sort before they go to sea they never get properly trained in these essentials, and turn out poorer seamen as a result.

The writer has heard complaints made by officers of the Royal Navy, as well as of the Mercantile Marine, that boys from the harbour training-ships, naval or mercantile, are no more sailors on first going to sea than the untrained lad. This is quite possible; but the training-ship must not be condemned on that account. No boy can become a sailor by spending a few months on board a hulk in a land-locked harbour, and it is only life on board a sea-going ship which will make him one. There is, however, no comparing a boy after one year's training in the harbour-ship with his untrained comrade; the most casual observer could not fail to appreciate the difference. The training-ship boy has developed from a rough, uncouth, undisciplined boy, into a smart, clean, well set-up youth, benefited both in mind and body by some months of good feeding and systematic mental and bodily training. All that a training-ship can do for a boy is to turn him out, not a ready-made sailor, but a decent, orderly being prepared to quickly assimilate a sailor's duties, and with the groundwork of his future profession more or less laid. The latest Board of Trade plan, and nearly all other schemes, ignores entirely the good and useful work done by the existing training-ships. In fact, under the last scheme they would have been cut out altogether. It would be a disadvantage to any boy to spend a year in a training-ship unless it counted as so much time off his apprenticeship in a sea-going ship.

Since no provision was made for this, the boys would naturally avoid the training-ships and go straight to sea.

As some misconception exists as to the number and functions of the existing mercantile training-ships, it will be as well to give a short account of them. There are distributed round our coasts two Reformatory ships, eight Industrial School-ships, and one Poor Law School-ship. These are all, either wholly or in part, supported out of the public funds. In addition there are four ships *exclusively* for boys of good character, supported by voluntary contributions.

The Reformatory ships are for youths under 16 who have been convicted of a criminal offence. These are the "Akbar" and "Cornwall."

The Industrial School-ships are for:—

1. Younger offenders, who may be sent up to the age of 14.
2. Boys who are beyond the control of their parents.
3. Truants whose character is so bad that they are not fit occupants of the truant industrial schools.
4. Children who, by the neglect or misconduct of their parents, are found wandering.

Of this class there are the "Clio," "Formidable," "Mars," "Empress," "Southampton," "Shaftesbury," "Mount Edgcumbe," and "Wellesley." [The "Formidable" is now a Training Home on shore.]

No children can be sent to a Reformatory or Industrial School-ship except upon the order of a magistrate.

It is hoped that in any fresh scheme no difficulties will be put in the way of Reformatories and Industrial Schools sending their boys to sea, and it is desirable that they should have a fair share in any improvements that may be brought about. Great credit is due to those who manage them for arduous work well performed, and they deserve every consideration.

There is another important training-ship quite distinct from the foregoing, called the "Exmouth," which is for destitute boys of whom the Poor Law guardians have the charge. Though the majority of her boys are of good character, this is not an essential qualification on admission, and for this reason the "Exmouth" has been placed in a class by herself.

Finally, we have the four ships which accept boys of *good character only*, which are the "Warspite" and the "Arethusa" at Greenhithe, the "Indefatigable" at Liverpool, and the "Mercury" at Southampton. Even in these ships the boys vary somewhat, owing to the different qualifications for admission. Thus, the "Warspite" will take poor boys generally from all parts of the Kingdom, but the "Indefatigable" deals chiefly with orphans, and those of seamen having had some connection with the Port of Liverpool.

No apology is needed for this somewhat lengthy explanation, since it is not so long ago that a special sub-committee, appointed by a certain society to go into the question of manning the Mercantile Marine, after a most exhaustive inquiry reported that there were no training-ships in this country for boys of good character—their report being quoted quite recently in a leading daily paper. Since "*experts*" have failed to come across these ships, after careful research, it is reasonable to suppose that their existence is not generally known.

We have said something in praise of training-ships, and have enumerated them—we must now return to schemes proposed. One which has received no trial, and but little attention, is that of the Navy League of 1901, yet this is, in its general idea, a really capital scheme and perfectly workable. Its only fault is, that it also entirely ignores existing training Institutions, and requires a large sum of money to set it going. New materials are also necessary, which would render the present ones quite valueless, though they are perfectly adaptable to all requirements.

The scheme provides for:—

1. The establishment of depôt training-ships.
2. Candidates to be of good character and physique, and of a certain age.
3. Candidates to be indentured on entry to a public official for a term of years, the first to be spent on board the depôt-ship and the remainder at sea.
4. Every candidate to be bound to go to a sea life.
5. Shipowners to be paid to induce them to take the boys.
6. Funds for maintenance of the ships to be found by the Board of Trade and the Admiralty, supplemented by grants from County Councils.

The greater part of this scheme is not new, and certain details have been in practice for a number of years; but it is a new and good idea to apprentice the boy to the training-ship official rather than to the shipowner. Making use of this idea, and of materials already to hand, can we not fashion an experimental training system which will cost no large sum to set going? If this is a success, the Navy League proposals might be considered again later on, and gradually introduced. We have our depôt-ships in the three vessels now training boys of good character only, viz.:—the "Warspite," the "Arethusa," and the "Indefatigable"—the fourth ship of this class, the "Mercury," since she trains boys almost entirely for the Royal Navy, need not be considered.

Let us take the work of the "Warspite" first of all, as she is managed by the oldest training-ship society in this country, and can therefore claim priority in age.

The ship lies at Greenhithe, Kent, and is capable of accommodating up to 500 boys. The Society's offices are in the City of London. The following are the qualifications for candidates. They must be:—

1. Of good character only, and certified honesty.
2. Between the ages of 14 and 16, and over 4 feet 10 inches in height.
3. British subjects.
4. Undertaking a sea life of their own free will, and with parents' consent.
5. Prepared on admission to undertake to go to sea at the end of their training, and to make a sea life their profession; entering either the Royal Navy or the Merchant Service, at the discretion of the Committee.
6. Able to pass a strict medical examination, as to their fitness for sea service, by the Society's medical officer.

The candidates accepted are thus almost identically the same as those going into the Royal Navy, except that the standard of age and height is lower, and a very small proportion of candidates are lost by boys whose parents are in a position to fit their sons out for sea at their own expense not being taken. This last comprises some lower middle class boys who make up a very small number, since parents of this class fly higher for their sons than a career before the mast, whether in the Royal Navy or Merchant Service. The class of candidate received, in fact, could not be improved upon. They are all good, honest, healthy boys, anxious to become sailors, and most desirable recruits, either for the Royal Navy or the Merchant Service. They are recruited from all parts of the Kingdom, though at least three-quarters come from London and the home counties, and more than half from London County alone. The recruiting and drafting to sea is carried out from an office in the City of London, where the Society has sufficient accommodation to make it a centre for the management of several training-ships.

I must, at this point, protest very strongly against insinuations brought against the existing training-ships for boys of good character, that because they are charitable Institutions, their boys are undesirable recruits for the Merchant Service, and that these boys are "tainted with poverty." Poverty carries no taint, and should be no objection whatever to a boy, if physically eligible, going to sea. The Royal Navy accepts recruits from the poorest districts, and what is good enough for the Navy, is surely good enough for the Mercantile Marine.

On joining the "Warspite," a boy is taught thoroughly all the elementary duties of a sailor, his schooling is continued, he has his muscles developed by physical drill, gymnastics, rifle and cutlass drill, and he learns to swim. At any time after three months on board, should he become eligible, a boy is drafted to the Royal Navy, and at the end of 12 months all boys are sent to sea in the Merchant Service.

That the training is beneficial physically is shown by the marked increase in a boy's weight, girth, and height after admission; that it is morally a success is amply proved by the high praise accorded to the "Warspite" boys after service at sea, both by officers of the Royal Navy and the Mercantile Marine. Except for minor details in the system of training, which requires to be altered from time to time, to keep it up to date, there does not seem to be anything wanting alteration as far as the ship herself is concerned.

There are recruits in plenty, obtained without any special recruiting being done; these are desirable boys in every way, and when they go to sea after training, do credit to themselves and to their old ship.

The weak spot in the "Warspite" system is the fact that the boys sent into the Merchant Service, though compelled to make a first voyage, are under no obligation to remain there. Consequently, a proportion of them throw up the sea after a voyage or two at most, and the Marine Society having no further control over them, the boys are lost to the Merchant Service, and their sea training in a measure wasted.

The remedy for this is simple, and does not lie as suggested by some in providing another training-ship, but in a slight alteration of the Society's existing rules on a boy's admission. When a candidate presents himself at the Society's office, both he and his parents are

prepared to agree to anything, provided he can go to sea. At this time then, the boy should be apprenticed to the Marine Society for a term of three or four years—the first year to be spent in the "Warspite," and the remainder in a sea-going ship. The apprentice to have the option at any time after leaving the "Warspite" of joining the Royal Navy, if found eligible, and all accepted to undertake to join the Probationer class of the R.N.R. on first shipment in the Merchant Service. The apprentice, when serving at sea, to draw the market rate of wages, subject possibly to a reasonable abatement in consideration of continuity of employment, and be able to rise in his rating on equal conditions with the non-apprenticed boy sailor. All apprentices to be berthed apart from the crew.

If some such plan was put into operation, the boys going into the Merchant Service would be kept at sea sufficiently long to get over any early wishes for change, and it is probable that the majority, when serving in good ships and lines, would have acquired such a taste for a sea life as to be unwilling to give it up. The apprentice would also be free from the interference of his parents; for, be it noted, that in nine cases out of ten it is the boy's parents who persuade him to leave the sea, even when he is quite contented and happy, their idea being that he will obtain better wages in some occupation on shore, of which they can have the fingering. The option of entering the Royal Navy at any time, if eligible, would not make this apprenticeship scheme unpopular, as would that of the Board of Trade, where no such option is allowed.

A ship like the "Warspite" could, if sufficient funds were forthcoming, accommodate some 500 boys. The "Boscawen," a sister-ship (or nearly so) of the Royal Navy, carries some 550 boys, and the "Exmouth," of less tonnage, 550 also. If the Board of Trade allowed a grant to shipowners in respect of R.N.R. boys carried in their ships, there would be no sort of difficulty, such as is now experienced, in getting the boys berths in the Merchant Service, on completion of their training. The shipowner would be glad to carry boys to get the grant, and would soon learn the value of boys who had been in a training-ship, finding them more or less in shape.

So far, the "Warspite," the "Arethusa," and the "Indefatigable," though managed on slightly different lines, and having some small differences as to regulations for admission, are very similarly conducted vessels. Their boys are all boys of good character, and desirable recruits for the Royal Navy or Merchant Service. Though there is not the same obligation on every boy on entry engaging to go to a sea life at the end of his training, some 85 to 90 per cent. of the boys trained in either ship go to sea. It is possible that were the authorities of these two ships approached, they would be quite ready to fall into line and apprentice their boys on entry as has been proposed.

We should thus have three training-ships to form a nucleus of our training service, all sending desirable recruits to the Royal Navy or R.N.R. The "Indefatigable" could accommodate some 250 boys, and the "Arethusa" 300, and assuming that two-thirds of the boys from these two ships and the "Warspite," when filled, were to go into the Merchant Service (the remainder into the Royal Navy), we should have 700 boys annually joining the R.N.R. This number

is nearly half as much again as that calculated under the Board of Trade scheme, which is 500 only.

Now to calculate the ways and means to carry this scheme into effect.

The Board of Trade hold forth as inducements to shipowners to take boys, a grant of £10 per annum for each R.N.R. boy carried during his first year, and £5 during his second year. Let these inducements remain. The cost in grants for the first year boys, 700, will be £7,000; allowing a wastage of about 20 per cent. during the first year for boys joining the Royal Navy, invalided, and other reasons, we shall have 560 remaining for the second year, cost £2,800, total £9,800. There need be no special retainer or money grant to the boys themselves, or grant of clothing. As they will draw a living wage and not an apprentice's pittance, they will be quite well enough off without any special allowances. The cost to the Board of Trade will thus be £9,800 only, as compared with £10,425 under their scheme, and they will have 560 boys at the end of the second year instead of only 440.

Since the Training-Ship Society will send the boy to sea with a complete outfit, the shipowner will not be called upon to put his hand into his pocket, and can raise no objection on this score.

As this point was the sole cause of the abandonment of the Board of Trade scheme, there would seem to be a reasonable probability of the terms now suggested being acceptable to the shipowner.

As to the boys' wages. Could not shipowners taking the boys be persuaded to give a fixed rate of wage, to be the same in all ships? The Canadian Pacific Railway Company[1] has a very fair system, which, if a little low at starting, works out well—a boy for his first voyage of 6 weeks receives 10s. per month, he can then rise to 15s. on his second voyage, and continues to rise on each succeeding voyage by 5s., until 30s. is reached. After that he becomes an O.S. if satisfactory, and draws £2 10s. per month. In the intervals of the voyages, the boys receive 6s. per week with maintenance and quarters on board if they stay by their ships, or 2s. 6d. per day for 6 days in the week if they elect to work on board and live on shore. This is a very fair and satisfactory arrangement.

The question of funds to assist the three training-ships to increase the number of their boys on board has next to be considered. The amount required should work out roughly at about £20 per boy above the complement now carried and limited by present income. The extra boys will be, "Warspite" 300; "Arethusa" 100; "Indefatigable" 50; total 450 boys, cost £9,000 per annum; with extra instructors, say £10,000. It is suggested that this amount should be found by the County Councils and County Borough Councils.

It has already been pointed out that there are in existence round our coasts 10 training-ships, either Industrial School-ships, or Reformatory-ships, all of which are almost entirely supported out of public funds. For their maintenance, the Treasury allows large sums under the Industrial Schools Amendment Act, as also do County and County Borough Councils. The total received by some eight of these ships is over £40,800. Each one of them is also supported by voluntary

[1] The Canadian Pacific Railway Company owns a line of fine mail-steamers running between Vancouver (B.C.) and China.—EDITOR.

contributions, and it should be carefully noted that the fact of their being State supported does not apparently prevent them receiving private and charitable assistance.

What a contrast do we find in the three training-ships for boys of good character. With the exception in each case of a grant of £54 15s. annually, for the services of a gunnery instructor, from the Admiralty (which is common to all the Industrial-Ships before mentioned, and has not been calculated in the sum total given), not one of these ships receives a penny from the State. They are all supported by voluntary contributions.

Surely, prevention is better than cure? Is it not a better policy to assist good boys to an honest livelihood before they drift into idleness and mischief, rather than take them in hand when they have gone astray? Considering what large sums are expended out of the public funds for the support of Reformatory and Industrial School-ships, it is not unreasonable to advocate that there should be similar grants to enable boys of unblemished character to follow a sea life when they and their parents desire it. In this scheme, £10,000 is asked for, a quarter only of that given to the Industrial School-ships.

It is worth remembering that the State, by thus assisting the good boys is, at the same time, providing our most important industry with desirable recruits, and filling the ranks of the Royal Naval Reserve. It is thus in part repaid for its expenditure, for every boy from these three ships will enter either the Royal Navy or the Royal Naval Reserve. It is quite otherwise with the Industrial and Reformatory ship boys, only a very small proportion of whom go to sea. Thus 10 ships training 2,840 boys in 1903, sent only 568 boys to sea, of whom 30 only entered the Royal Navy. Taking into consideration that the State aid given to the Industrial-Ships does not interfere with their private support, there need be little apprehension that the ships for boys of good character, if State aided, will suffer any loss of income in this respect.

So far, three training-ships have been provided, turning out 1,100 boys, of whom 700 will annually swell the ranks of the R.N.R. The majority will presumably remain at sea until the completion of their indentures, and the question now arises, how many of these probationers will make the sea their profession, and join the seaman class of the R.N.R.?

Under the present "boy sailor" scheme, the results have been more than disappointing. Some 3,839 probationers were enrolled from the commencement of the scheme up to 24th August, 1904, and of this number 125 only joined the seaman class. The State thus paid for nearly 4,000 boys, to be rewarded with a paltry 125 seamen at the end. It is necessary to our present plan that some provision should be made to encourage the youths who remain at sea to join the ranks of the R.N.R. The shipowner must be called upon to assist to this end. It should be a rule that every ship carrying out Government contracts, whether for carrying mails, subsidised as an auxiliary cruiser, or acting as a transport, should have a certain proportion of R.N.R. seamen amongst her crew. There should be no difficulty in enforcing this rule when contracts are made, for there is no trouble to the shipowner, who has but to insist, and the men will be found perfectly willing to join the Reserve. As soon as it is found that in good ships preference is given to R.N.R. seamen, recruits will be enrolled up to any number.

There is only one more point to deal with, and that is the present difficulty of keeping boys and youths at sea after a certain time. We have provided for their retention until they have completed their indentures; after this they are free to do as they please. The liners have no difficulty now, and will have none in the future, in keeping their youths, who will serve as men, and who, now and always, will oust the foreigner, because the conditions of life, viz., food, cooking, accommodation, and treatment, compare favourably with other employments on shore. These vessels form only a small proportion of our total shipping, and it will be otherwise in tramps and small vessels, unless the conditions of life at sea are greatly improved. The shipowner can do much with little expenditure of money to make his ships more comfortable and the life more attractive. Without any grandmotherly legislation, or interference, which will hamper the shipowner, surely the State can step in and compel those owners whose ships are a disgrace to the country to better the conditions prevailing. If the present regulations were strictly carried out and enforced, life at sea would be far better than it is with no fresh legislation. It has been necessary to dwell on this point somewhat, for though nothing to do with the training service, it would seem to be waste of time and money to train up sailors unless they keep to the sea just as they become useful and know their work. Opinions differ as to what is necessary to make life in the Merchant Service more popular, but something should certainly be done, and that soon.

We have now outlined a scheme which can be tried at no great cost for, say, four or five years. At the end of that time, if successful, the Board of Trade should again go into the question and put the training service on a thoroughly satisfactory basis. The proposed plan is tentative only, and is arranged in order that existing conditions may be disturbed as little as possible, in the event of failure. Should the plan prove a success, the funds and boys be forthcoming and the three ships mentioned become full, an extension of the system would become necessary, and it is worthy of consideration who should undertake this. Surely if it is to be a private society, this should be one which has had sea training as its one sole object, and is consequently experienced in the subject. The Marine Society, for example, has been sending boys to sea for 149 years, and has had a training-ship (which was the first of its kind) since 1786. If any society is to take over the extension of the training service surely the Marine Society is well fitted by age and experience to do so. The Navy League, however, has started a Training-Ship Association, which it is proposed should administer any extension, and here we have again the mistaken idea of starting a brand-new Institution to cut out or compete with existing ones, which a little alteration would bring thoroughly up to date. The Navy League has done excellent service to the country by bringing forward this important manning question, and it deserves all credit for doing so; but is it well-advised in entering upon a path and duties for which it was never intended? Is it not doing better work in waking up the nation to the needs of such a training service, and by stirring up those who should properly take the work in hand, which is its true function, than by dissipating its energies in running a training service of its own?

In any reorganisation of the service which ultimately takes place, care should be taken that money and energy are not wasted

by overlapping, that is, by multiplying the number of Institutions doing the same work where a less number would suffice. For example, we have now the "Warspite" and "Arethusa," which ships, merely for want of funds, are both short of their complements; whilst this is the case there can be no need for any similar Institutions to be started, since both ships accept boys from any part of the United Kingdom. Yet another charitable Institution has arisen in the shape of the Lancashire Sea Training Home for Poor Boys, and it is constantly brought to notice as if it was something entirely new. To establish the home about £13,000 was subscribed by philanthropic persons, and it is now capable of accommodating some 100 boys. The first establishment charges of this Institution must be at least £1,000 per annum, over and above the maintenance of its inmates. The whole of the £13,000 before mentioned, and the £1,000 per annum which it now costs might have been saved if the existing Institutions had been made use of. A local committee could have been formed in Liverpool to deal with applications from boys desirous of going to sea, and those accepted and considered fit for a sea life could have been sent to the "Warspite" or the "Arethusa." The cost of sending these 100 boys from Liverpool to London, training and maintaining them for one year, and, if need be, ultimately shipping them from Liverpool, would amount to about £20 per boy. The cost per boy in the home cannot be less than £30 per boy, and its committee is now asking for further funds, and complaining of the home being only half filled.

It will of course be argued that the existing training-ships are not doing the required work. This may be the case, but it is easily remedied. The training-ship committees are anxious to keep their work up to date and make it as useful as possible, and slight alteration of their arrangements and additional funds are all that is necessary; there is no need whatever to start another Institution, differing only in some small details, which is what has now been done.

The number of ships or homes in any future scheme must be regulated, first by the demand for boys, and secondly by the supply. Three ships have been suggested as a commencement; these will be found ample for complying with the present demands of the shipowner, and further ships will only add to the existing competition. The supply of boys should always be equal to the demand. The present ships manage to keep their numbers with no recruiting system, and it should be easy, with a little Government assistance, to raise many more boys. Seeing that the Royal Navy, which must always offer greater advantages and be the more popular service of the two, can only maintain some 7 primary training-ships, it is no use proposing to establish a large number for the Merchant Service. In all probability six ships or homes on shore, turning out about 2,400 boys per annum, will be the limit for many years to come; say two in the Thames and one each in Liverpool, Cardiff, Southampton, and Hull.

In conclusion, the writer submits this training scheme, which is capable of being tried on a small scale and at comparatively small cost, with no upsetting of existing Institutions, and believes that it will be found to answer requirements better than some of the costly schemes hitherto put forward, all of which involve a large outlay for trial alone, and entirely ignore the good and useful work now being carried on.

Mr. JOHN GILLIAT (Chairman of the Training-Ship "Cornwall"):—I hope someone else will speak on this valuable paper. My credentials are that I am on the Committee of the "Warspite," and for nearly forty years I have been Treasurer of the training-ship "Cornwall," and for the last few years have been their Chairman. The result of the very interesting paper which we have listened to, to my mind, is this. One of the most pertinent observations which the lecturer made this afternoon was the extreme waste of money in founding new institutions when we have these old ships which are doing their work. Of course, the "Cornwall" is largely supported by Government and by county contributions. The boys who are on her are entirely composed of reformatory lads picked out of the gutter, and they are little fellows who are more sinned against than sinning; but after a few years we send them into the Mercantile Marine, and so on to the Navy. They do not take them into the Navy first of all, and quite rightly so, because they have the taint of crime upon them, but they often pass from the Mercantile Marine into the Navy. This is a work in which there are 250 boys involved; it is a good work, for it is picking boys out of the gutter and training them to be useful members of society. In that ship, I may tell you, we keep up constant communication with the boys who have gone from among us. One great part of our committee work is to receive every month a record of the boys who have left us, and in that way we keep in constant touch with them. We also do that by means of our Chaplain, who has been for many years a member of the Thames Mission Service. He keeps up communication with the boys all over the world. So you will see that we are kept well informed about them. Now take the "Warspite," which is 150 years old, nearly. There is a ship which is absolutely ignored by a large portion of the people of this country. We all thoroughly believe in the maintenance of the Navy; we profess to want to keep it up; we say that it is our safeguard, and we know it is; that it is our only safeguard against foreign invasion, and yet we seem to ignore these great ships. There is the "Warspite" only half full, a splendid ship lying at Greenhithe, and nobody knows anything about it, as it seems. I have talked to people about it, and they have said: "What is the 'Warspite?' I do not know it at all." They do not know the work which has been going forward on board it during the last 150 years, with all the experience that it has gained. That is a great national shame, I think. There are plenty of contributions to be had, and people will always give to a new thing. They rise to this new thing in Lancashire, but they ignore the old, the old which should be supported. Lieutenant Bosanquet, you see, hopes to see the County Councils assisting us in this matter. Certainly, if they did, it would be doing a far greater work than many of the things they do, and perhaps they will take up such work. But my appeal to this small company here is to support the existing institutions, the existing training-ships, the "Warspite" and the "Arethusa," for from them the boys can be carefully selected, both for their morals and for their character, and their health, and sent always to sea after a short period, and after a time into the Navy. There is no wonder that our English lads shirk the sea. Who would consent to be on board with a gang of foreigners—some 40,000 of all kinds in the country—who are generally, with the exception of Norwegians and Swedes, of a very low class indeed? And no doubt, their condition of life on board becomes a very bad one. If we could get our Mercantile Marine purged of foreigners, and if we could get English boys

of proper character, I am sure the whole system of our Mercantile Marine and Navy afterwards would be improved. I offer these few remarks, Sir, with great thanks for the paper which has been read; but I am sure that the great thing is, that these ships which I have mentioned are not known, or if they are known they are slurred over. We want a great deal of money at the present time for the "Warspite," we want much money to set it free even from debt, which is a shame for a ship of that kind. We want people to take an interest in the matter, and to support these training-ships, for through them boys are trained to go to sea.

Captain A. W. CLARKE (Trinity House) :—I am heartily in accord, Sir, with all that Lieutenant Bosanquet has said in his paper, but I think he has forgotten one inducement for boys to go into the Merchant Service in preference to going into the Navy. A boy who enters the former Service as an apprentice has an opportunity, if he has any reasonable amount of education, of becoming an officer, or master of any ship that floats under its flag. Therefore, there is an inducement for boys to go into the Merchant Service in preference to going into the Navy, where they cannot rise to be in command of the ships, or to be executive officers under the present regulations, except in rare cases. There is another slight difficulty—not that I wish to decry the proposed method—and that is, that already in the Merchant Service there are apprentices in very many of the ships, these lads being apprenticed to the ship-owners, with the view of becoming officers and masters. So that we should be in a position of having two classes of apprentices on board a great many of the ships, one class to be able seamen, that being the proposition put before us to-day, and the other, being a better class of boy, destined to be officers. I do not think it is a very grave difficulty, but I think it is one which is worthy of consideration. I do not think anyone can help being struck with one of the most important things said in this paper, and that is, that the Reformatory ships, which train boys of indifferent and even bad character, are liberally supported by public and Government funds; whereas the ships that are training up boys of good character, but of poor parentage, and which want funds just as badly, do not get a single penny, except the paltry £54 2s. 2½d., which they get for their gunnery training. Again, I agree with the officers of the Merchant Service who have told Lieutenant Bosanquet that boys leaving training-ships are not sailors. They are quite right; but I think they went a little too far when they said that they were no better than the boy who went straight to sea from school. They must be better, for the reasons given by the author of the paper. I know, from my own experience of the training which the boy gets in a training-ship, because I have had the pleasure and honour of being connected with one of them for some time. The boy gets for 9 months or 12 months reasonably good healthy food, he gets training under men who are accustomed to training boys, who have been under training themselves all their lives; he is taught habits of cleanliness, decency, and respect to his superiors, and to obey orders. Therefore, necessarily, he must be a better boy than one who comes from a poor home straight away, where, in many cases, he has not had these advantages. Then there is the question of inducements to the ship-owners to better the conditions of life at sea. I have said in public before, that the ship-owner in many cases reasonably does all that you can call upon him to do, having in view the competition that exists between the Merchant Service of England and other countries, and indeed between the different English ships and companies. I do not say he could not do better, because you can always do better, but he has got to make

money. But what I should like to say here again now is, that much can be done to better the condition of the boy at sea in the Merchant Service by the ship-master and his officers. In their hands lies a good deal of the comfort of the boys who have to earn their living at sea, and if the ship-master and his officers worked together to make the conditions of seafaring life better than they are now, to look after the boy's food, and keep his accommodation in cleanly order, I don't think we should have the complaint which Lieutenant Bosanquet says we now get from the boys' parents, that a boy has a better life ashore, and of the complaint which the boy himself makes of the hard conditions under which he has to go to sea. That kind of thing I know does not appertain to the big steamship lines, because in them the food is always reasonably good, and the men in command see that the accommodation provided for the boys is good and as it should be, and their apartments are kept clean and properly ventilated, and altogether the boy is fairly well looked after. What is the result? There is no difficulty about getting the Britisher for the big steam-shipping companies. It is the exception to see foreigners on the regular lines of British steamers, when the crews are properly looked after, and it is only when you come down to the tramp or the boats on some small lines that we find the "foreign invasion," as it is called. With great respect to Mr. Gilliat, I do not think it is quite correct to say that all foreigners who come into British ships are of the class which he described. I must say, from my own personal experience, that the Swede, the Norwegian, and the Dane are most respectable men, well-behaved, sober, and capital seamen. I will not say so much for the Spaniard and the Italian. The Russian Finn is also a capital sailor; they are well-behaved men. And though the British sailors, when you get them good, cannot be beaten, many of them would do well to copy the decent and orderly example of the foreigner. At the same time, it is almost incredible that a nation like ours should be forced to employ foreigners, when we have got thousands of ideal men, who are out of employment. I am afraid that is a somewhat difficult subject, and its solution depends on the sailor himself. He must fight his own battle, and prove to the ship-master and the officer that he is better than the foreigner. I say that because the wages that they get are the same. It is easy enough to get boys to go to sea: there is always a large number of boys willing to go, but the difficulty is to keep them there when they get there. They go for a couple of voyages and then they throw it up, because the conditions are too hard. I do not wish to criticise the paper which has been read to us this afternoon by Lieutenant Bosanquet, because I am heartily in accord with it, and I would particularly like to see one thing which was brought forward by him become practical, and that is, to encourage a Royal Naval Reserve. We want to help the boys to fill the ranks of the Reserve. It could be done as has been suggested by the lecturer, all ships under contract to carry mails, or which are under Government contract, being obliged to have not only part of the crew Royal Naval Reserve men, but all men, and officers in command. This would help to fill the ranks of the Royal Naval Reserve, because those men applying for positions on the mail-ships would find it necessary to join the Royal Naval Reserve in order to get employment. As a member of the Merchant Service, I desire to thank Lieutenant Bosanquet most heartily for his paper.

Captain W. P. Lapage (Liverpool Mercantile Marine Service Association):—I come as representative of the Mercantile Marine Service

Association of Liverpool, and I attended this meeting under the impression that the discussion was really one in connection with the higher education of officers for the Merchant Service. But now that I am here, as I have for many years taken a great interest in the subject of the education of sailors, and as I believe, I am the oldest representative of the cadets of H.M. School-Ship "Conway"—it is 46 years since I joined that ship—I am, I think qualified to say something about sailors. I was very glad to hear this very descriptive account of the different training-ships in London, and also in the other parts round our coasts. But I disagree with the view held in some quarters that there are already sufficient training-ships. I do not think there are half enough of them. I believe that training-ships should be established in all the large ports. The point is, not that these training-ships in London are of no use; we do not think that for a moment; it is a question of being on the spot. You see the advantage; the boys can board those ships, see how well the boy is looked after, that he is well fed, and he is able to converse with him on the subjects connected with the sea which he has been taught by others. The boys in those localities cannot come to London to do that; they must do it at the port to which they belong. And there are thousands and thousands of boys about the districts of Liverpool and Manchester and Hull and Newcastle, and so on, especially towns in the North, who would be glad to go to sea, and whose fathers would be willing for them to do so, if the subject were introduced to them in this way. I am also glad to mention one subject, which, of course, all of us dwell upon in this connection, and that is, with regard to the foreigner in our service. Personally, I have carried crews of every denomination and nationality, taking them from the humble and mild Lascar, the half-breed Cuban, Chinese, Japanese, and Malays, in various parts of the world. And I must say, and I would not speak it if it were not true, and for the benefit of our own country, that the British sailor is the best I ever carried. And I say this with all due deference to other ship-masters, that unless they have strict discipline with the British sailor, he will take advantage of the laxity. But where you have good discipline you have not better men in the world. There is one subject which has been a great deal referred to, and upon which I dare say a good many gentlemen here whom I see will not agree with me, and that is, whether the Royal Naval Reserve is one of the best things for the British Empire, although they will feed and man our ships when we go to war. But who are the men who are going to man our merchant-ships at such a time? What are these merchant-vessels going to do without their crews, which have gone to the war-ships when cereals and breadstuffs have to be carried? There will be no other men to man the ships. It is as essential to have those ships manned in war time as it is to have men in the war-ships to defend our coasts. I would not speak derogatorily of the Royal Naval Reserve, but mention the subject because it requires a great deal of attention. Then there is the question of the class of boy. The boy who becomes an ordinary or able seaman in the Merchant Service is the boy who has probably obtained a great idea of sea life by reading novels, Marryat's and others. They have been told what the life is, and they prefer the Merchant Service to the Navy, because they can see more life, and go to Japan, China, India, and other countries, and be constantly on the move; whereas the bluejacket in the Navy is confined 3 to 5 years on one station. And I can assure you, as one of the Committee who has to do with these things, that these boys have an objection to going into the Navy because they cannot roam about from place to place in

the way that they can in the Merchant Service. So, I think much of the tendency to go to sea can be attributed to the influence of the old novels. But you do not find such novels nowadays. You go to a bookstall and see cheap racing and society novels of every description, but you hardly see one which is connected with the sea. When I was a boy, nearly every novel had something in it about a sea life, and that is how many of us were induced to go to sea. But the matter is different abroad. Take Japan for instance. I have travelled through Japan, and I have seen villages where in nearly every place you go to there is a man told off to talk about the deeds of their ancestors, and what they have done and been, and to stimulate the people to do what they can for their country. We have nothing of that sort here. It is seldom that we even hear a lecture like we have to-day, especially in connection with the Merchant Service. After those few words I would like to thank the lecturer for reading us his excellent paper.

Staff-Paymaster FREDERICK WOOD, R.N.R.:—I have been acquainted with sea-faring matters for about 50 years, and I can bear my testimony to the excellent work that the Marine Society has rendered during that time. I agree with the lecturer that there is no necessity for any more training-ships. The great difficulty is not in getting the boys for the training-ship—there are plenty of boys eager to go to sea—but to get them provided for and started at sea. With regard to the "Conway" and the "Worcester," it is not necessary to mention them, they only produce officers. There never was a scarcity of officers, and there never will be. The real difficulty is the scarcity of men. We want to get boys to go to sea after having got into the training-ships. There is no employment for apprentices and boys at sea such as there used to be, and although the tonnage is largely increased, the true sailing-ship has died away very much. When I had the pleasure of shipping our Chairman to-day for his first voyage, there were plenty of sailing-ships which used to go up the Mediterranean and the Baltic and the White Sea, and the West Indies, and there were sailing-ships going to the Canaries and the Azores, but they have now absolutely disappeared. They want men in the big ships. Someone said to me that they do not want boys. We want to persuade shipowners to take them. With regard to the relative merits of foreigners and British subjects, I shall not go into that thorny discussion now. I think that a great deal that has been said against foreign seamen is an exaggeration. I think the question is, not whether they are good or bad, or worse or better than the British; but in the case of great stress, when we have to supply losses from the Fleet, we could not call upon these men to take the place of those who were killed or disabled. It must be borne in mind that sailors do not grow ready-made; they must be prepared as boys to be seamen; or in a time when we may be opposed by two or three naval Powers, the supply will be soon exhausted. There are hundreds of boys anxious to go to sea; the difficulty is to keep them at sea. Of course, there will always be a serious loss and waste in this way; that well-trained seamen are valuable on shore and having berths offered them, want to marry and settle. The London Fire Brigade men are almost exclusively sailors, so are the men who erect scaffolding, and men who are in charge of wharves. Those men make way in the Navy for younger men. That I do not think is a disadvantage, because in time of national peril they will be attracted to the Navy again. We are dependent upon the Navy for our national existence. Therefore, the supply of boys in

the Merchant Service is necessarily of importance, because the whole history of the world shows that no Navy was ever powerful or successful unless it rested upon the broad basis of a prosperous Merchant Service. That is the history of the world. We know very well that the Power that gave us more trouble than any two great Powers combined was the small State of Holland. We never had an easy success over it; we met our equals and our match, because they were sailors and fishermen, well trained, and had a prosperous Merchant Service to draw upon. The Merchant Service may be prosperous in money matters and get good freights, but that is not the point which we are considering it from, but how far it conduces to keep men at sea for the subsequent defence of the country. I think the lecturer has done a great service in bringing this paper before us. He has shown clearly that the difficulty is not that of getting the boys, but of inducing the shipowners to take them. I do not blame the shipowner, because he has to contend against foreign competition, and he is subject to restrictions to which the foreign shipowner is not subject. Anything which can be done to induce shipowners to take lads is a great service, and I heartily wish that Lieutenant Bosanquet's effort may be successful.

Mr. H. N. Sulivan :—If you will allow a non-member of this Institution to speak, I would like to say that I had the honour two or three years ago of reading a paper here on this very subject. I have only just arrived in London, and seeing the announcement of the lecture, came in unfortunately too late to hear it. The only information I have as to the contents of the paper is that obtained from hurriedly looking over the printed copy. But so far as I have seen it, it seems to run practically parallel to my expressed views. What is the present state of our Mercantile Marine? You have heard it from the Government Enquiry Committee. I have spent 20 years at Newcastle and Liverpool, and I know something of the Mercantile seaman. I spoke with some fishermen on the Tyne, and they said: "Do you think we would let our sons go on board merchant-ships and mix with these?" That was their opinion of the average seaman of the present day, but I do not condemn the whole body of them. The liners, doubtless, have the pick of the men. I spoke the other day to a captain of a P. and O. steamer running to Australia. Of course, he had his crew composed of British subjects, but all natives of India. There are two weak points in the manning of the Merchant Service: the deterioration in quality of the men, and the reduction of the proportion of Englishmen. We may want to man extra men-of-war, and we may want to fill up the waste of war, and of sickness, and for this we have no effective Reserve. During the Boxer rising in China in 1900, a considerable Naval Brigade from the fleet was employed on shore, and this was the case also in South Africa. If a disaster had happened then, or if they had been locked up a little longer on shore, and war had broken out with a naval Power, what about the fleets in those waters? Half-manned ships would have been sent against properly-manned ships of the enemy. What would the French have done under such circumstances? They would have gone round to their merchant-ships in those foreign waters, and drawn men from their crews to fill up their complements, and every one of those men would have served 3 years in the French Navy. It was in 1862 that my father, the late Admiral Sir B. J. Sulivan, proposed the Naval Reserve.[1] His

[1] This is incorrect; see Note at end of discussion.—Ed.

aim was, on the one hand, to improve the British Merchant seamen, and on the other hand, to supply our Navy with a Reserve of trained men. The authorities adopted only a small part of his scheme, and lessened the value of that by robbing it of its essential points: training-ships for boys, service in men-of-war, and pensions. He warned the Committee that if they did not keep a permanent hold on their man by an adequate pension, when war-time came he would slip over to the Americans or other neutrals. That is a warning we have recently had illustrated. We did not give the White Star Line a pension, but a yearly subsidy; they drew that, and when the crisis came we found that all the thousands which we had paid were wasted, and their ships went over to America. And so it will happen to our present Reserve man. He gets his pay in his hands now. Latterly the Government have added a £12 pension, but do you think that is large enough to keep him? The Americans will offer him big pay to run their ships, and those bought from us when our trade is restricted. But if we offer the seaman, in lieu of present pay, a big pension of, say, £30, as my father proposed (£20 from Government, and £10 from his own contributions), we shall have such a hold upon him that he will not risk this by leaving us in the time of war. The other proposal was, that there should be training-ships maintained by Government in our sea-ports, not such as they are now, mostly Industrial ships, but for boys of good character, so that it should be a privilege to get appointed to one. When I had the honour of lecturing here, I tabulated statements of nearly all the training-ships in England. With the exception of the "Indefatigable," the "Warspite," "Arethusa," and "Mercury," all the ships in that table were Industrial or Reformatory ships. The "Indefatigable" sends all its boys into the Navy. Of the Industrial and Reformatory ships but 20 to 40 per cent. of the boys who have had that splendid training go into the Mercantile Marine. Masters will not take the Industrial boys, and, in the second place, few of those boys want to go to sea. So, although it is good for the boys to have this training, for the supply of sailors, this training is, in great measure, wasted. Liverpool captains have said: "We will not take a training-ship boy." The captain of the "Indefatigable" told me that they have the greatest difficulty in separating his boys in public estimation from those of the Reformatory-ships. He tries to get a ship for one of his boys, but is told, "No, we don't want thieves here." Let the Government give the training for nothing for two or three years, on the stipulation that at 20 years of age that boy shall serve a year in the Royal Navy. He has had his training, like the Frenchman, and he goes back into the Merchant Service, with a reservation for war service, and you may have him out for a month or two annually for drill. We shall thus assist our Navy and our Mercantile Marine by having a better class of man than at present, and a larger Reserve for war-time. Captain Lepage has asked what the Merchant Service would do in war-time if we want our Naval Reserve men for the Navy. My father said: "You must be prepared to lay up half your merchant-ships, in order that the other half will be able to go to sea, because, unless you strengthen your Navy in this way, your Mercantile Marine will be shut up." What is the present position of privateering? The privateer is abolished, but we have the subsidised cruiser. They fly the blue flag; but what do the men know of naval service? Few have ever been on board our men-of-war; they have only been trained in an obsolete class of ship. What about the French subsidised liner? She is also a Reserve cruiser, but is manned by officers and seamen, every one of whom has served 3

years in the French Navy. Ship a few quick-firing guns on board such a mail-boat, and let her meet at sea one of our American liners, or a P. and O. boat, manned with Lascars, and which would get the better of it? In the old days, the English ship was able to hold her own against a French privateer, or even a small French man-of-war. I would like to hear the opinions of others who are here on this aspect of privateering. I think the more the subject of the lecture is ventilated the better, because of the importance of the Mercantile Navy as a feeder to the British Navy, and the necessity for the improvement of our Mercantile Marine, and the reduction of the foreign element in it. It is important that the nation should be educated up to the subject. There is now one opportunity for you to say to the ship-owner that he must employ more British sailors. He will want something for doing so, and that you can give him. My father was for 9 years Head of the Marine Department, of the Board of Trade, with the lights of the country under his supervision, and his opinion was, that it was hard for the ship-owners only to have to pay for the lights, seeing our Navy profited by them. We are the only nation that does not give free lights. He said: "Let the ship-owners pay half the cost of the lights and the Government pay the other half." If the Government to-morrow took over all the existing lights, and kept them going, the ship-owners, having established the lights, have provided the capital. Let that be the ship-owner's contribution. The interest on that capital will about equal the cost of maintenance. Let the ship-owner give the capital, and let the nation pay for the maintenance of those lights. If you now said all ships carrying English officers and crews of Englishmen to the proportion of three-fourths should be exempted from light dues, the ship-owner would have some *quid pro quo* for the little extra expense incurred, and the nation would reap the advantage of having a real British Mercantile Marine, and from it could draw a greater Reserve of seamen for the strengthening of her Navy.

Commander D. Wilson-Barker, R.N.R. (Commanding Thames Marine Officers' Training-Ship "Worcester"):—If any method could be found for keeping sailors in continuous employment, I feel sure that that would be one of the means by which they could be kept at sea more than is the case at the present time. On the mail-boats they found respectable men sailing voyage after voyage. They always came back to the same port, and it paid them to belong to those companies. The number of foreigners referred to as being in our Mercantile Marine included Lascars. But those men could not rightly be considered as foreigners. I think it is only right and proper that those men should have a chance of some employment in our Merchant Service, especially in Eastern and Indian trades, where the conditions of heat and moisture are so trying that very few Englishmen can stand them. I agree entirely with the remarks made by Captain Wellesley Clarke with regard to foreign seamen, and I would further add that this complaint is a very old one indeed, dating back, in fact, to a time previous to the founding of the "Warspite." I wish to thank the lecturer for his able paper on a most interesting matter, which I think should receive close and careful study.

Lieutenant H. T. A. Bosanquet, R.N., in reply said:—The criticisms of my paper have been chiefly friendly. There are only one or two things which require to be specially referred to, and as it is getting late I will not take up much of your time. Captain Clarke spoke of the difficulty of having

two classes of apprentices at sea, officer apprentices and seaman apprentices. That has already been tried. The Shipping Federation for some time past have had the boy apprentice, that is to say the boy sailor under indentures, and although the scheme has not been a great success, I believe it has not been due to the fact that the boy apprentices have been mixed up with the officer ones, but for other reasons. I do not think we need apprehend any difficulty there. As to the conditions of life at sea, it has been mentioned that captains can do a great deal. I would refer you to a recent report of the Medical Officer of Health for the Port of London. One particular point that he brought forward was the amount of space given to seamen to live in. That, I think, shipowners should remedy. The dog's holes which the men have to live in at sea are a disgrace at present in very many ships. With regard to the rate of wages paid to foreigners and to Englishmen, I think Mr. Wood will be able to tell us that there are a number of ships whose crews are discharged abroad, not at home, for the reason that the rate of wages in ports such as Hamburg is much lower than the rate of wages in England. On this account, many of the ships are discharging their crews abroad rather than at home, and as there are, of course, more foreign than British seamen in foreign ports, a greater proportion of foreigners are to be found in the crews when shipped abroad. Captain Lepage mentioned, that he should like to see more training-ships established, and I agree with him. I do not wish to insinuate that there are now enough ships for future requirements, but as Mr. Wood has pointed out, the present demand for boys is not sufficient to warrant more training-ships being established until the ones which we now have are full. Although it may be very desirable to have training-ships at Hull, Liverpool, and other seaport towns, to bring the sea life to the notice of the local boys, it is more costly to train 250 boys in two ships than 500 in one, and it is a better policy now, when money is rather scarce, to train an increased number in the existing ships, rather than start new ships or homes whilst the old ones have only half their complements. In regard to the Navy League, I particularly do not want to fall foul of the Navy League for taking this matter up, all honour to it for doing so; but I wish to point out that to actively indulge in this training service business is not the League's work. The Navy League was started as " a non-party organisation, to urge upon the Government and the electorate the paramount importance of an adequate Navy, as the best guarantee of peace." There is nothing in this about training-ships. The Navy League is a society which should stir up the people to establish training-ships if necessary, rather than actively take up the training service on its own account. It was for that reason I called the League to task. It is doing the work of other existing societies, of which the Marine Society is one. If the Marine Society is asleep, let the Navy League wake it up by all means; but I do not think it is asleep, its managers are anxious to do what is required, and to come up-to-date. I will only say in conclusion that what we want now is co-operation, that it to say co-operation between the societies that are training these boys, the Shipping Federation and the Government; because the Shipping Federation are now working entirely independently of the training-ship societies, which refuse to send their boys under the Federation scheme. If these two work together, and the Government also, we shall have an efficient training service for the Mercantile Marine.

The CHAIRMAN (Commander W. F. Caborne, C.B., R.N.R.) :—I think it is extremely satisfactory that we should have had such an excellent

paper this afternoon, from one who is intimately and practically acquainted with the subject and working of Mercantile Marine training-ships, and who, by his zeal and ability, has done so much to further the good work of the Marine Society. However, Lieutenant Bosanquet is anxious that it should be perfectly understood that he has given this lecture entirely in his private capacity, and upon his own responsibility, and not as the secretary of the association I have just named. With regard to the large and ever-increasing number of foreigners employed in our Merchant Navy, I hold every strongly, and have often expressed the view, that it constitutes alike a national danger and a national disgrace About two years ago, an attempt—which I promptly denounced in a paper on "The Royal Naval Reserve," which I read in this theatre about that time—was made to, in some measure, cover up this open sore by the simple and novel expedient of endeavouring to naturalise aliens who had served for a certain period in British ships, the Government fees chargeable in their case being reduced to about five shillings per head; but I am happy to be able to state that even at that low price there has been no great rush of such persons to acquire British nationality. During to-day's discussion, it has been remarked that the alien question has been much exaggerated, inasmuch as the Lascars are included in the number of foreigners quoted by the lecturer. But that is not the case, as according to the latest return (that for 1903), the aliens number 40,396, and the Lascars 41,021, which together would make 81,417, instead of about 40,000. Under any circumstances, Lascars, although their skins are dark, must not be considered in the light of foreigners, they being, like ourselves, British subjects, and, as such, fully entitled to any employment which they can obtain under the British flag. It is possible that in the future some of them may be utilised for the purposes of national defence. I may mention that while engaged in the East, I carried Lascar crews for some years, and formed a high opinion of them. It has been further suggested—although that suggestion has been withdrawn under correction—that the average percentage of foreigners employed, as shown in official documents, is too high in the case of sailors and firemen, owing to the cooks and stewards being principally aliens. Now, the census taken by the Registrar-General of Shipping and Seamen in 1901 entirely dissipates that theory, as it shows that the alien percentage in the foreign-trade for petty officers' ratings was 39·3, for sailors 44·0, for firemen and trimmers 34·6, and for stewards, cooks, etc., 15·5. The percentage in the case of masters, mates, and engineers being comparatively small, reduces the general average. Before leaving this branch of the subject, I may point out that in 1901 the percentage of foreigners among sailors engaged on board foreign-going sailing-vessels was 52·3, while at the present time it is estimated to be nearly 60. The causes of, or the reasons for, the influx of such a large number of outsiders are various, and would take too long to enter into this afternoon, and so I will leave that part of the question alone, except to say, in connection with the observation made by one speaker that British seamen should show themselves superior to those of other nations, and so win back their employment, that the former have certainly not been proved to be inferior. Otherwise, how is it that our large liners, where good men are requisite, and the conditions of life are favourable, are manned almost entirely by our fellow-countrymen? It is not on board the mail-steamers or in the coasting trade that the aliens abound, but rather in the "tramp" steamers and long voyage sailing-ships, and I consider that this fact reflects more upon the character of these latter vessels than it does upon the character of British seamen.

Of course, it cannot be asserted that all British seamen are angels; neither are their foreign rivals; but it is indisputable that in an emergency few ship-masters would be desirous of exchanging a British crew for one composed of aliens. With regard to the men of the Royal Naval Reserve, they most decidedly form the best and steadiest section serving afloat under the red ensign, and ship-owners derive material advantage by their being given a preference. From the paper itself, and from the discussion, the inference will be drawn that men require greater inducements held out to them to join the Royal Naval Reserve, and that considerable difficulty is experienced in obtaining recruits. However, the erroneous nature of this idea will become apparent when it is known that, owing to the popularity of the force of late, the Admiralty last December virtually stopped recruiting, as the requisite number of men had been enlisted. Moreover, much attention is now paid to the training of the men of the Royal Naval Reserve, and as all of them have to serve afloat in the Royal Navy for a period, they should be fully equal to playing the part which may be assigned them in time of war. Of their readiness to come forward for service when called upon, I have not the smallest possible doubt. Mention has been made of the way in which the abolition of, or a reduction in, the light dues might be utilised in connection with a manning scheme. Now the Government plan for the training of boys, which has just come to an end, after a trial extending over six years, was based upon a reduction of the light dues, and failed largely on that account; partly owing to the aversion of ship-owners to the light dues generally, and partly because the long voyage vessels were placed at a disadvantage as regarded the reduction when compared with coasters and short voyage traders. Although a certain number of boys went to sea under its auspices, as pointed out by the lecturer, very few of them were subsequently enrolled in the Seaman Class of the Royal Naval Reserve. Some ship-owners are quite in favour of carrying boys, but it is to be feared that the attitude of the vast majority of them is well summed up by the lecturer, when he says: "Ship-owners will have no boys unless it is a clear case of gain for them at every point." When the recently devised Admiralty scheme, which has since been dropped, was under discussion, a correspondent wrote to a weekly shipping paper: "There should be a pecuniary grant given for all boys borne on a ship's articles of agreement. Leave the youths to enter the Naval Reserve or not, as they wish." But for what reason, other than that of providing men as a Reserve for the Fleet, should the Government be called upon to pay money for the training of boys? It has been asked: What will the ship-owners do in order to man their vessels when some thousands of Reserve-men have been withdrawn in time of war from their ordinary avocation? Well, the answer is: The best they can, if they have not had the foresight to provide in advance for such a contingency. However, it must be remembered that there will be a goodly number of long-shore men available to fill vacancies upon an emergency, and also that there are not many Naval Reserve men engaged as a rule in making long voyages. At the same time, it must be taken into account that should Great Britain become embroiled in a naval war, many of the foreigners now sailing under our flag would promptly leave it—some to take arms against us, and others because they would be unwilling to incur any personal war risk. The possible danger from many of those who might elect to remain ought not to be overlooked. I am sincerely anxious to see something done in the way of getting British boys to sea, and Lieutenant Bosanquet's scheme appears to be a good one, although, when it is carefully examined, there may be some

details requiring further consideration. I quite agree with the lecturer that it is necessary to look at the matter of training, not only from the respective standpoints of the Government and the ship-owners, but also from the point of view of the boys and their parents—these latter, I fear, having seldom been properly considered. Then, the boys being obtained, the difficulty will be to get them to remain at sea, and that, as I have urged over and over again in this theatre and elsewhere, will only be done by considerably improving the conditions of service afloat in the Mercantile Marine. I am extremely pleased to notice that the lecturer, while mainly concerning himself about respectable boys, would not altogether close the door against those who could not justly be so described. We are all, more or less, the product of our early education and subsequent environment, and while the training of these last-named unfortunate youths may present many difficulties, it is a good and noble work to endeavour to transform those who otherwise would become the dregs of society into honest and worthy citizens and loyal subjects of the King. Before concluding, I wish to mention that Admiral Sir Nathaniel Bowden-Smith, who would have presided to-day but for a slight indisposition, and whose absence we all regret, desires me to say that he is "in entire sympathy with the views of the lecturer." It now only remains for me to ask you to accord a very hearty vote of thanks to Lieutenant Bosanquet for his very able and interesting paper.[1]

[1] Mr. Sulivan is clearly in error in stating that his father proposed the formation of the Royal Naval Reserve in 1862, because that force is a practical outcome of the Report of the Royal Commission on Manning the Navy of 1859, the first enlistments taking place in the following year, and the enrolled strength on the 31st December, 1860, being 2,879 men. Various schemes and views dealing with a proposed reserve of merchant seamen for naval purposes in time of war were placed before the Royal Commissioners, two of them being alternative plans (one compulsory and the other voluntary) by Captain (afterwards Admiral Sir) B. J. Sulivan; but the credit for proposing the enrolment of a body of merchant seamen to be specifically named "The Royal Naval Reserve," is due to Commodore (afterwards Admiral Sir) Charles Eden, an earlier witness.—W.F.C.

THE STRONGHOLD OF SCHAMYL.

By Colonel C. E. de la POER BERESFORD, p.s.c., late Military Attaché, H.M. Embassy, St. Petersburg.

I WONDER how many of the people who possess Dâghestân rugs of various colours and texture have ever given a thought even to the country of their production? This land of mountains, table-lands, rapid and shallow rivers, and few but good communications, was the home of Schamyl, the famous Tâtar or Circassian, who for so many years resisted Russia's onslaughts with success. It is now a Russian Province, of which the chief town is Temir-Khân-Shùra, locally curtly styled Shùra. It lies between 45 deg. and 50 deg. Longitude E. of Greenwich, and 41 deg. and 42 deg. 30 min. N. Latitude. North of it is the country of the Tchetchenges, a Terek Province of Cis-Caucasia; and the main chain of the Caucasus mountains forming its southern boundary, rears its mighty wall between it and the sunny vineyards of Kaketia. On the west it is bounded by the land of the Ossetes, wild tribesmen who always held the pass of Dariel; on the east the Caspian Sea bathes its shores. It is an ancient land, whose old capital, Derbent, could tell tales of the Sassànides, Shah Kalâd, and his son, the wise Nushirvan. It was they who built the great wall, which stretching from the shores of Derja-i-Chyzyr, as the Persians call the Caspian, up and past the citadel above the town, is often lost in the clouds. Past this barrier the wild Kazars could not pass; these iron gates closed Persia to them. The vine, melon, tobacco, apple, hemp, and maize flourish in Dâghestân. Its fauna number the royal stag, wild boar and goat, wild cat, and *Tur* (*capra cylindricornis*), a mountain goat with fine convoluted horns. Its rare game birds, the *kouratch*, or partridge of the hills, woodcock, pheasant and teal, are thinned down by its numerous raptores; amongst these, the royal eagle, lammergeier, ruffnecked vulture, kite, raven, and hawks of various sorts, are those seen oftenest by the traveller.

The mountains except in the south-west of this Province are the limestone and chalk masses which, tossed and tumbled by some mighty upheaval, are pierced at rare intervals by the igneous peaks and outpourings which have forced up their way from below. The basalt pinnacles of Kazbek, Ushba, Tetnuld, and Elbruz are all over 16,000 feet high. They are not in Dâghestân, whose summits rarely rise above 9,000 feet. Yet at the source of the Andiski Koi-Sû is Borbalo, 10,807 feet; and to the east again Schâlbus-Dâgh, Schah-Dâgh, and Bazar-Dzusi rear their snowy heads nearly 13,000 feet into the air. The snow-line is about 9,000 feet on the northern and some 11,000 feet high on the southern slopes of the great Caucasus chain. The lower hills make up for the want of the white mantle in summer by their grotesque and fantastic outline, so that the Province is not inaptly styled Dâgh-estân—the land of mountains. For administrative purposes the Russians have divided it into nine districts, viz.:—Témir-Khân-shùra Avàr, Andi, Gûnìb, Dargi, Kitâch-ta-Bassaràn, Kazi-

koum, Kiorî, and Samûr. The total population is about 600,000 souls, employed in agriculture, stock-raising, rug and felt making. The Lesghian bourkha, or long, sleeveless cloak of black hairy felt is also made in Dâghestân. Clothed in this, surmounted by huge sheepskin caps, the Dâghestâni roams in his hills, leaving the hard labour to his wife, who toils in the fields whilst he drives the cattle. Although Mahometans, the women are not veiled. The men are hospitable, hardy, poetical, and somewhat musical in temperament, brave and hospitable to strangers. The education in this country is behind any other part of the Caucasus, and the Russian, or indeed any Giaour, is scarcely loved here. These mountaineers are passionate and very quick to strike, quarrelling constantly amongst themselves; they use the dagger or pistol with which they are armed on the slightest provocation Just before my departure from Shûra, an inhabitant of one of the *aouls*, or mountain villages, named Abdûl-Kadîr-Murtazof, riding in from Gûnib had a curious adventure. Weary, he lay down to sleep on the roadside. As he slumbered, his vendetta enemy, Râchmet-sân-Galimoff, passed that way, and descending from his ass, awaited patiently the awakening of his hereditary foe. Then a deadly combat ensued, in which Galimoff was mortally wounded. Before his death he took from his purse 95 roubles, which he begged his adversary to hand to his widow. Abdûl-Kadîr took the money to the woman and then gave himself up to the police! Well might one of my guides remark to me: "These fellows think no more of taking a human life than of taking a cup of tea."

Shûra, the administrative capital, is a pretty but uninteresting town The road to it from Petrovsk passes over a limestone ridge, from which a view of the Caspian is obtained to the South-East. From Petrovsk to Shûra is 35 miles, which a phaeton and 4 horses, driven not tandem but abreast, gets over in 3 hours. There is one change on the way at a neat post-house kept by a German from the Baltic Provinces. It was curious to hear the Teuton tongue in these wild uplands, and to contrast the cleanliness of this with other post-houses. At Shûra there is a clean *nomer*. A *nomer* is a furnished apartment where only tea and biscuit are served in the way of food. The ride to Gumrî, the birthplace of Schamyl, should not be missed. This place is of quite another type to the prosaic, white-washed Shûra, with its inevitable green-roofed Russian church. From the top of a great, almost precipitous, limestone crag you look down upon an assemblage of flat-roofed cabins, which the goats and cattle share with the human occupants. The last houses of this nest overhang a sheer precipice, at the foot of which the river rushes unseen, but not unheard. At Shûra one can buy ponies for from £5 to £10 apiece; one will carry you, and the other your baggage. This should not be heavy, so that your bât-horse need never be far behind you. It is as well to test your guide, horses, saddle, girths, etc., by one or two short rides before starting into the mountains; also to lay in a stock of provisions, insect powder, tobacco, etc. The neglect of this precaution caused me some very unpleasant experiences of semi-starvation. For it is as well to warn the traveller that in the mountain villages not even bread is obtainable. It is seventy-five miles by the post-road and about fifty by the bridle-path, *viâ* Aimaki and Girgebil, to Gûnib from Shûra. A most interesting account of the ride through the quaint villages was published years ago by General Sir A. Cunynghame, in a book called "The Black Sea, Caucasus, and

Caspian" (John Murray). Save for a few errors as to local names, this work gives a most correct idea of this wild and little known country. But of Gûnìb more anon; I will first show how to get there.

I left Shùra at 6 a.m. on 24th September, and arrived after a seventeen-mile drive across uninteresting uplands at Djeng-û-tai. The Postmaster here was a quaint specimen. He offered me tea and cakes, and informed me that he would let me have a carriage and four horses to take me to Hunsâch, *viâ* Gûnìb, for forty-three roubles fifty kopecks. I suggested paying a little more to go as far as Botlich, two stations farther on; but on this point he was politely inflexible. Tramping through the mud in his yard I noticed an ancient trap, minus bottom-boards and one wheel. This, he explained to me, was my phaeton, which would be ready in an hour! Cursing my luck and the delay, I waited an hour and a half in the dreary post-room. Djeng-û-tai is a large village or town of 3,000 inhabitants. It is a terminal post-station; this means that you must change your carriage here as well as horses—this whether or not there be another vehicle to carry you on. In the latter case, you may have to pass the night in places where food is scarce but bed-fellows are numerous. Some people prefer to start from Djeng-û-tai rather than Shùra. I would advise those who do not wish to do the seventy-five miles in one day to sleep at Hodjal-Mâchi, or the station before it, Levashì, in both of which places the post-houses are clean. From Djeng-û-tai to the next station is eleven miles—collar work all the way. From a high range a grand view is obtained. Over a foreground of maize fields and orchards a Tâtar *aoûl* appears on a precipitous rock, standing out like a sentinel 500 feet above the river below. The positions of those *aoûls*, clearly placed in inaccessible positions for safety, give a glimpse of the manners and customs of the inhabitants. One cannot see how even a goat can reach them! Beyond this village, named Paràoûl, are ranges of limestone hills bare as the palm of your hand, and if the sun is shining, a glimpse of the Caspian. Fifteen miles on is Urma, built of stone; hitherto the villages have been of sun-dried bricks. I was offered rugs here of poor colour. From Urma to Levashì is a barren limestone district with scarcely any grass in autumn, but which bursts into green in spring directly after the melting of the snows. Here are herds of well-shaped cattle and enormous flocks of *doombas*, or fat-tailed sheep. One wonders that their tails do not wag them, so big and heavy are they. Their wool is of every shade: black, brown, white, grey. Enormous caps of this wool in natural colours are for sale in all the villages. I bought one for forty kopecks, and found it most useful in the high mountains. At Levashì it was fair-day. Grapes at 1¼d. a pound, rosy apples and peaches, which latter are renowned among the Dâghestânis, but which I found half ripe, hard, and indigestible. Eggs and whole sheep, both uncooked, were the only other food in the market at Levashì. The mountaineers were bargaining with Russian pedlars for cheap and gaudy cottons from Moscow. The contrast between these swarthy peasants, with their aristocratic hawk-like faces and piercing eyes, and the snub-nosed moujik men and women, was most marked. A noble figure clad in a fur-lined khâlàt, or swathed in a black bourkha, his belt stuffed with *kindjals* and pistols, their handles shining with silver or studded with turquoise, bargains with a fair-bearded Russian in a red shirt and baggy breeches stuffed

into his high boots. A Babel of voices arises. The relative values of scraggy sheep, sweet grapes, fur caps, and cotton kerchiefs are discussed in a hundred tongues. For in these mountains each valley has its own language, and in some places one half the inhabitants of a village have a speech different from those of the other.

Hitherto the road had been monotonous, if not uninteresting; but now it changes. We topped a col here from which is obtained a view of a weird gorge worthy of illustration by Gustave Doré. Not a tree! Huge limestone cliffs are buttressed by shaly slopes and hillocks, which the erosion of ages has shaped into the most fantastic forms. The passage of water in later times has worn grooves in these again. They appeared in the evening sun like huge organs with pipes of ruddy gold. The shapes of the various hills are so abnormal and strange that I can only liken them to troops of huge mastadons or other giant mammals, lying petrified in death, their mamelons sky-pointed! Above these lower hills the serrated cliffs rise to a height of some thousand feet, their strata at times outcropping. The general lie of these is vertical, and the curious razor-blade, almost perpendicular surfaces, glistening in the sun, are the sides of shale exposed to view. The strike, or line of the outcrop, is the summit of the hills, whose saw-like edge (*sierra*) forms a curiously notched horizon. I met in this curious glen, or Devil's Ditch as I termed it, many companies of horsemen. In their *bâshliks*, or pointed head-dresses, and flowing bourkhas they seemed like warrior knights sallying out to the fray. The little creaking ârbas, drawn by cattle smaller than the smallest Dexter, often blocked the way. Few roads in Dâghestân have any side walls or parapets, and one is sometimes forced unpleasantly near the edge. Beneath, at a depth varying from 30 to 300 feet, was a water-course. Along this road, round rapid turns, unmindful of warrior knights, carts, or local djins, my *yamschik*, or post-boy, hurried his horses as fast as Eclipse. Suddenly, as one wonders where can be the exit of this gloomy glen, the road makes a sudden turn, and the rocks open out fan-wise. We enter the village of Hodjal-Mâchi, in the valley of the Kazi-Kûm Koi-Sû. The little stone flat-topped cabins nestle together under a huge pointed cliff. Mountains with almost perpendicular sides shield the valley from the north; under their shelter the orchards, vineyards, and maize fields flourish. Through a deep cleft beyond the village, shaded with fig trees, the river, bridged by an arch of stone, rushes turbulent and shallow. Onward it speeds, giving greenery and life around, past Gergebil, where the Kàra (black) Koi-Sû falls into it, to its junction, some ten English miles farther on, with the Avâr Koi-Sû. The quiet beauty of this lovely valley contrasts pleasantly with the forbidding uplands between it and Shùra.

At Hodjal-Mâchi I had to wait for an hour or more. The only team of horses in the post-house had just come in, and had perforce to be fed. The next stage was a long one, all uphill. The moon rose and cast fantastic shadows over rock and field. The creaking ârbas, returning home from work, several times nearly collided with my phaeton. Small villages with poplar trees, tiny mosques with toy minarets, *doukhans* or village inns, where dirt and simplicity reign, shone out picturesquely white and black in the moonlight. From the summit of the pass an apparently almost interminable descent began. The zig-zags of the road cut out of the chalk rocks were almost startling in their alternations of light and shadow. Fearful

precipices, the walls of chasms too profound in gloom for the eye to fathom, loomed dark below, while the limestone cliffs towered up above in almost steely brightness. I noticed that in the few places where retaining parapets had been built the weight of the masonry had often proved too great for the edge of the road, and gaps were left with crevasses more dangerous than the frankly open edge. Wild stories of the actual proximity of the passing carriage to the side of the road are often circulated in these parts. Looking over frequently to train my eyes and nerves to these giddy heights, I noticed that in no case did the tire of the wheel go within two feet of the edge; but this enables the traveller to look literally out, over, and down into the depths below. Now is the sky clear and studded only with stars. In the dark clefts above, the vulture and the royal eagle, the kite and geïer, that have been soaring thousands of feet above, are now resting. A few twigs and the bleached bones of their prey form alike their nest and resting place. Closer to the road repose the sparrow-hawks and merlins, who by day offer tempting shots on the telegraph posts or wires. The chattering magpie and jay are silent; perhaps a night-jar's croak, or, if the maize be not yet pulled, a corn-crake's chatter, alone breaks the stillness around. 10.30 p.m., the post-house of Salti, five miles from the *aoûl* of that name and seven from Gûnìb. There was a furious battle near here between the Dâghestânis, with the Lesghians, and the Russians. As the latter worked up the valleys from the plains they built forts at the feet of the mountains, and sent settlers to occupy the valleys they had won. These, mostly Terek Cossacks, found it to their interest to cultivate the soil and protect themselves and their crops from the mountaineers. So they won the land for themselves, and drove the hillmen farther and farther into the barren rocks. At Salti I only got horses after much persuasion; no driver was available! At last I started for my drive along the beetling cliffs, above the foaming Kàra Koi-Sû, past the *Georgievski Most*, or St. George's Bridge, covered by loop-walls of iron; past the first locked and castellated postern of Gûnìb, up and up the two miles of zig-zags, the fortress literally overhanging one the while, till the second postern was reached. Here the heavy oaken gates opened after careful inquiry, and in a few minutes I was at the door of the Commandant's house. It was now midnight. The household were all in bed; but a kind Lesghian servant showed me a sofa, on which I lay me gladly down to rest, to explain on the morrow the why and the wherefore of my clandestine arrival. Since 6 a.m. nothing had passed my lips but two cups of tea and 2 lbs. of grapes, for I had been unable to buy bread in Shûra in the early morning. The distance of seventy-five miles had been covered, including stoppages, in eighteen hours. So different is travelling up and down from crossing a level plain.

Gûnìb, "a fortress formed by Freedom's hands," is the spot to which Schamyl retired with only 400 men after waging war on the Russians for over twenty-five years. It was in July, 1859, that Prince Bariàtinsky, the Russian Commander-in-Chief, managed to wrest this stronghold from the dauntless Dâghestâni. To accomplish this, a much superior force of fourteen battalions, and a regular siege was necessary. Bariàtinsky's guns, placed on a neighbouring mountain, could not reach Gûnìb with their projectiles. Imagine a huge isolated limestone mountain, 5 miles long by 3 miles broad,

rising 4,500 feet above the valley below. On the top a higher plâteau, wooded, and with a babbling brook, surrounded by hills; the whole divided from the under features of the mountain by a huge overhanging, eroded, almost castellated wall of rock. On the plateau is the village where Schamyl lived, and with his few men he guarded this inaccessible spot from attack. A path leads up the mountain on the western, or side distant from the main camp. It was terribly difficult; but a few Russian soldiers, provided with climbing irons, managed to arrive at the top. Here they found but a single Lesghian, who was promptly bayonetted. Then the whole battalion followed and formed up on the plateau. At daybreak Schamyl, who was opposing his adversary on the eastern side, found his retreat occupied and cut off. He sent a parliamentary to Bariàtinsky asking him to come up the mountain, where he would arrange terms for capitulation. "My people are weary of war," he said, "and I must surrender." The conquerors made generous terms. Schamyl was sent a prisoner, first to St. Petersburg, and then to Kazan. Eventually he was allowed to go on a pilgrimage to Mecca, and died on the way there. I rode up to Schamyl's house and purchased a small stone bottle as a relic, much to the surprise of the inhabitants, who wondered what the Giaour could do with so useless an article. One of the Emir's sons served in the Russian Army, and I met a grandson of his a few days after my visit to Gûnìb, at Védéno. Before I left the fortress my kind hosts, the Commandant of the place and his charming wife, filled my wallets with excellent food and wine. I fasted no more on my journey.

From Gûnìb camp (altitude 3,934 feet) to Hunsâch, some thirty-five English miles, the road leads back past Salti station (2,422 feet), over St. George's Bridge. Through its loop-holed gates, behind which lurked a mountain gun, and past a defile commanded by cliffs 6,000 feet in height, I passed to Kâra Dâgh. The black mountain rises in front, and the huge calcareous cliffs around are a splendid spectacle. Near here is a most curious passage in the shaly rock through which Gûnìb can be reached. It is called *Slantsevoyie Ushchele*, or the Shaly Gorge. Truly it is the most curious natural feature in this region, so rich in surprises. The bottom is only wide enough to allow a single horseman to pass, whilst the vertical sides of the defile tower above him, almost excluding the light of day! Kâra Dâgh is a beautifully mild and picturesque spot. A fine one-arched bridge spans the Avàrski Koi-Sû here. The fort defends the bridge and the roads, which branch off to Shûra, and towards Kakhetia, but is commanded by adjacent heights within rifle range. A nice grass plateau surrounds the clean post-house, kept by an old soldier with a pretty daughter. The road to Shùra is broad and metalled. A sportsman might pass a few days pleasantly here, and get kouratch and some wild goat (ibex) horns, besides a few cock in season.

To the north the road ascends in zig-zags 4,000 feet in a horizontal distance of three miles! The gradients are easy, but the ascent seems interminable. Up into the mists we ascended, past rough limestone blocks, between which grew an Alpine flower much like edelweiss. At the top is a broad plateau miles in extent and heart-shape in plan, across which a very good metalled road leads to a fortress and post-station of Hunsâch (5,530 feet). The fort has

precipices, the walls of chasms too profound in gloom for the eye to fathom, loomed dark below, while the limestone cliffs towered up above in almost steely brightness. I noticed that in the few places where retaining parapets had been built the weight of the masonry had often proved too great for the edge of the road, and gaps were left with crevasses more dangerous than the frankly open edge. Wild stories of the actual proximity of the passing carriage to the side of the road are often circulated in these parts. Looking over frequently to train my eyes and nerves to these giddy heights, I noticed that in no case did the tire of the wheel go within two feet of the edge; but this enables the traveller to look literally out, over, and down into the depths below. Now is the sky clear and studded only with stars. In the dark clefts above, the vulture and the royal eagle, the kite and geïer, that have been soaring thousands of feet above, are now resting. A few twigs and the bleached bones of their prey form alike their nest and resting place. Closer to the road repose the sparrow-hawks and merlins, who by day offer tempting shots on the telegraph posts or wires. The chattering magpie and jay are silent; perhaps a night-jar's croak, or, if the maize be not yet pulled, a corn-crake's chatter, alone breaks the stillness around. 10.30 p.m., the post-house of Salti, five miles from the *aoûl* of that name and seven from Gûnìb. There was a furious battle near here between the Dâghestânis, with the Lesghians, and the Russians. As the latter worked up the valleys from the plains they built forts at the feet of the mountains, and sent settlers to occupy the valleys they had won. These, mostly Terek Cossacks, found it to their interest to cultivate the soil and protect themselves and their crops from the mountaineers. So they won the land for themselves, and drove the hillmen farther and farther into the barren rocks. At Salti I only got horses after much persuasion; no driver was available! At last I started for my drive along the beetling cliffs, above the foaming Kàra Koi-Sû, past the *Georgievski Most*, or St. George's Bridge, covered by loop-walls of iron; past the first locked and castellated postern of Gûnìb, up and up the two miles of zig-zags, the fortress literally overhanging one the while, till the second postern was reached. Here the heavy oaken gates opened after careful inquiry, and in a few minutes I was at the door of the Commandant's house. It was now midnight. The household were all in bed; but a kind Lesghian servant showed me a sofa, on which I lay me gladly down to rest, to explain on the morrow the why and the wherefore of my clandestine arrival. Since 6 a.m. nothing had passed my lips but two cups of tea and 2 lbs. of grapes, for I had been unable to buy bread in Shûra in the early morning. The distance of seventy-five miles had been covered, including stoppages, in eighteen hours. So different is travelling up and down from crossing a level plain.

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a garrison of 600 men and four guns. The site is commanding and well chosen. At Hunsâch I was right royally entertained by the Russian officers, and next morning taken for an inspection of the village. Here is a most holy relic, to wit, the ancient coat of a Mussulman Saint, said to be 800 years old. It is covered with extracts from the Koran, written in Arabic on its ancient remains. This relic is regarded with great veneration, and was shown to us by a mûllah almost as ancient-looking as his charge. A curious feature of Hunsâch is the river which falls down the rocks almost vertically a distance of 1,400 feet. From the flat roofs of the houses above one gazes down on the gardens below, grape-laden and sun-flooded. Flowers blossom in them in the early spring when the high plateau of Hunsâch is swept by furious winds, and the mountain sheep die in the drifts of the snow. My hosts told me that the ground was sometimes white with the latter in June. In September the temperature was very pleasant and the air most invigorating.

I committed an indiscretion here, for which I hope no other traveller may suffer. I should, according to arrangement, have sent back my phaeton from Hunsâch to Djeng-û-tai, but finding no other conveyance available, and the post-master indifferent, I made bold to take it on to Botlich. It should be noted that there is a regular service from Djeng-û-tai to Hunsâch, and from Botlich to Védéno and Grosni; but the communication between Hunsâch and Botlich is most uncertain. It is for this reason that travelling on horseback is preferable to phaeton work in these mountain districts. The road from Hunsâch, at an elevation of 6,000 feet, crosses and recrosses a trouty-looking tarn. The oat stooks in the fields reminded me of Derry or Donegal. Soon the inevitable descent began. The road being under repair was very difficult to pass. Masses from the rock from above had in some places so littered it that there was scarcely room to pass; on one occasion the workmen who had been engaged in blasting came to our assistance. Two of them hung on to each of the off wheels on the mountain side. I got out and pushed the carriage from the side of the precipice, my feet being almost on the edge. In this way we passed a very ticklish place. The views as we descended were splendid. Tâtar, or so-called Tâtar aoûls, perched on inaccessible crags, dominated smiling fields, orchards, and vineyards. Above were gloomy clouds and forbidding peaks wreathed in mist. After Motgasi the road descends very sharply to Tloch, in the valley of the Andiski-Koi-Sû. Alabaster rocks, through which the road is cut in cornice fashion, tower on the left; the villages on the right are 2,000 feet below. The sun's rays are reflected gleaming back from the white alabaster. Many wild pigeon flew, startled by our troïka, from their rocky resting places. A couple of kouratch, or partridge, shot across the road in front of us. This was the only game I saw on the whole of my five days' journey in the mountains; yet I was in a country where both tûr and ibex exist in numbers. But these shy creatures naturally avoid the roads, whilst the rattling of a troïka does not conduce to success in spying out game. The post-house of Tloch is situated in a charming position. A huge, almost vertical, cliff protects it from the north; a good iron bridge spans the Andiski-Koi-Sû, which rushes foaming to the north-east, through orchards, where the vines are trailed from tree to tree as in Lombardy and Savoy.

Gimri, of which I have spoken before, is only ten miles from here. In its fearful gorge the Andiski and Avârski-Koi-Sû unite. The two streams flow on north towards the Caspian Sea, passing under the Grosni-Petrovsk railway at the bridge and town of Sultân-Yângi-Yourt. Tloch is about 2,000 feet above the level of the sea. The road from it to Botlich is not unpleasing, but the scenery is tame, after the wonders one has seen. Near Botlich it is extremely dreary, not a blade of grass or tree after leaving the Andiski-Koi-Sû valley; but as a compensation, just before reaching the patriarchal walnut and willow trees of Botlich, a glimpse is obtained of the distant snowy range to the south. The peaks I took from their bearings to be the mountain range whose glaciers, about nine English miles long, feed both the Koi-Sû rivers. Its highest points are Ijeni-Meer, Adala-Shûghòl, Bogek, and Tinaoug-Gegelatel, all between 13,000 and 13,600 feet high. A little nearer are Chartla-goch-Meer and Adâtl-Meer, whose summits in September were not even dusted with snow, though over 11,000 feet in altitude. These peaks are nearly fifty English miles from Botlich, and constitute the water-parting between the Koi-Sû and Terek Valleys on the north, and that of Kûra and its tributaries to the south. Botlich is an excellent centre for tûr and wild goat shooting. I was told that a young Englishman, "who could speak no word of any language," had been there lately, camping in the mountains with a guide, but I did not hear with what results.

On my arrival at Botlich at about 10 p.m., I found that General Prince Y., to whom I was recommended, was absent with all his family, but his charming residence, with a balcony overgrown with a grape vine, was placed at my disposal. His servant, Abdul-Medjid, was waiting for me, and served me a truly Turkish repast, consisting of fruit, almonds, rahât-la-coum, and coffee. Later, he provided me with a shâshlik, a kabob of mutton grilled on a spit, a universal dish in the Caucasus. Soon afterwards, I was called on by Colonel N., who offered every assistance. Learning that I wished to push on next day, he asked me if I intended to travel by post-chaise (in which case he would telegraph to Védéno for one, none being available at Botlich); or whether I would ride over the mountains, a distance of some thirty English miles. In the latter case, he observed each horse would cost about two, whilst a chaise would come to twenty, roubles. His own sons were starting next morning on horseback, and would be glad to accompany me if I did not find the hour of departure too early. I decided for the horses, and the hours fixed were: departure of baggage horse 3 a.m., and of riding horses 6 a.m. sharp. I threw myself on the divân, covered with Tekké Turkoman rugs, packing up my bags, and putting them outside in the hall, so that I might sleep undisturbed until 5 a.m., at which hour the gentleman with the late Sultan's name was to call me. I need not have done so. The bât-horse did not arrive until 6 a.m.; or three hours late! By this time I had finished breakfast and was ready for the road. My steed, a useful-looking pony, about 14 hands high, arrived at 7 a.m. My baggage weighing under 50 lbs. (including a melon which I had brought from Astrakhân, and which certainly scaled 5 lbs.) was ready strapped. The Colonel's sons, one of whom was a student on his way to Rostov-on-the-Don, and the other a smart young officer of Cossacks, quartered at Sarikamish, on the Turkish frontier, near Kars, were by this time ready; but their luggage necessitated the

use of three pack animals. The kind Colonel noticing that a Tâtar saddle was provided for me, sent for his own, of European make, and put it on my beast. This was an act of friendship, which only those whose fate it has been to suffer in a Cossack or Tâtar saddle can appreciate at its true value. The whole male population of Botlich accompanied us through its tortuous streets; veiled faces peering through many a wooden shutter the while. The beautiful walnut trees and well-kept gardens were soon left behind, and at the commencement of the mountain path our friend the Colonel, and the village population, left us with many blessings. Our party was now reduced to our three selves, an escort of four Tcherkesses, and one man on foot, who accompanied us the whole way. The baggage animals had gone on about an hour in front. The post road from Botlich to Védéno (forty-five English miles) was constructed for the Emperor Alexander II.'s visit to Dâghestân, and is a master-piece of engineering. It passes the camp of Gando, and the lovely lake of Aisilam, nearly 5,000 feet above the sea-level, said to be full of beautiful trout. I was sorry to miss this lake, but on the other hand, on horseback one has peeps at the inner life of the inhabitants denied to travellers by road. Our route, the veriest stony track, led to the Godor gorge and village of Andi, a remote retreat of Schamyl, now famous for its bourkhas or felt cloaks. But before entering this gorge we had to traverse the mountain path between the villages of Tasûta and Chanho, some 6,700 feet high. The mists rolled down on us, and one could only just see the crupper of the horse in front. At one moment the sun pierced the fog, and I saw my pony quietly looking down a perpendicular cliff, hundreds of yards in height, and a foot from his hoofs! As the fearful place came in view, a great raven flew from a neighbouring pinnacle, uttering a warning croak! My guide told me that several people had fallen over here in the fog. Presently we arrived at a nice, grassy place, where my companions proposed off-saddling for breakfast; but the hour was so early, and the place so cold and misty, that I objected, suggesting that by about midday we might reach a lower altitude with a southern exposure, where the conditions would be more favourable for a comfortable meal. So, for the first time, we cantered our ponies over this plateau.

Diffuse as I have been, I have not clearly explained the character of the scenery of Dâghestân. Beneath the igneous peaks, or even the great limestone crests of the higher ranges, one moves across a succession of plateaux, from which one looks down into the deep gorges all around. In these soft, cretaceous, shaly, or even alluvial valleys, the water has worn its way. The impression on the traveller then is not one of driving through gloomy gorges, and looking up to heights above (though the roads must naturally pass through such abysses), but rather of passing over a high tableland, intersected by cañons, defiles, chasms, which form interludes in the system of plateaux, and down which he gazes. After passing Chanho village, a miserable group of stone huts, the sun again broke through the mist, revealing a huge valley, of which the slope facing south, which we were descending, was clothed with short, sweet, grass. Here were numerous flocks of sheep tended by shepherds, armed with the invariable kindjal, and accompanied by fine-looking, very fierce dogs. The path was now broader than before, but nevertheless, two of these animals considered it not wide enough for themselves and me, and

resolutely stood their ground to bar my passage, snarling and barking furiously. But they had not noticed my *nagaika* or Cossack whip! Whilst they were still about 50 yards off, I put my pony at the gallop at them, and catching the first dog with the *nagaika* on the nose as he sprang up, considerably cooled his ardour. To his comrade, who was coming at me from the near side, I then administered "cut four pursuing practice" with the same instrument, and sent him howling and bleeding to rejoin his brother. The shepherds looked by no means pleased, but as our escort pointed out to them, they had been warned to call off their dogs, which they declined to do, preferring to leave the "yellow-haired Giaour" to take his chance—which he did, in the manner I have described.

As we entered the Godor gorge, our guide Omàr rode in front, singing loudly in a melancholy strain. A huge chalk cliff formed one side of the defile. The Godor brook rushed babbling by. To the east, far above us in the mist, were the aoûls of Ashâni and Rikhâni; and in front of us, built of limestone blocks, was Andi, its flat-topped houses piled apparently one on top of the other up the mountain side. Women in trousers were employed washing bourkhas in the rivulet, fouling its sparkling waters with the black walnut stain of the felt. Then the bourkha would be dried, re-stained and re-washed, and so on. As we passed through the village, most of the inhabitants came out to look at us; whilst others, as the smith, the wheelwright, the baker, plied their trade in the open air. The men were handsome, eagle-faced, all armed; the women of fine stature and figure, but prematurely old from exposure and hard work. To them falls all the agricultural labour. It is a sad sight to see a woman working at the disgusting task of making cow-dung fuel, whilst the men look on idly. A little beyond the village we came to an oat field, from which the stooks were being carried, where we spread out our bourkhas and had a satisfying, if somewhat indigestible meal, of apples and meat-tarts, and excellent white bread, which I had not seen since Astrakhân. Also the eternal Vodka, from which, with Russians, there is no escape. The Cossack officer, warmed by wine, called me a hero, and vowing eternal friendship, fired off his six revolver ball-cartridges into the air. His brother warned him that the ammunition might be of value further on. My experience of many hundred miles' travel in the Caucasus goes to show that no danger is to be apprehended from the inhabitants, but that brigands do exist in certain localities, as I was warned by the Highest Personage in St. Petersburg, is, of course, true. Yet I, on plain or mountain, by lake or river, on wheels or no horseback, never came across them. One of the ponies seized the opportunity to roll with his saddle on, which called forth cracks of the whip, with objurgations and allusions, uncomplimentary to its female ancestors, in Turkish from Omàr.

The Limestone defile, through which we passed on the way to Védéno, was the scene of many a bitter conflict between the Lesghians and the Russians. It was wonderful the success with which Schamyl battled for years against the best leaders of the Tsar; against Yermòloff, Yevdokìmoff, Vorontsòff, Grabbe, and finally Bariàtinsky. Our own recent experience with the Boers gives us an idea of the difficulty of conquering brave mountaineers, armed with superior weapons. The Dâghestânis had the advantage of using rifles against the Russian smoothbore. At one time, Schamyl was in flight, followed by only a few devoted friends; at another, he had driven his foes from every

stronghold in Dâghestân, and had shut them up in Petrovsk on the Caspian shore. Finally, discipline and perseverance carried the day, and the gallant Schamyl was taken prisoner to St. Petersburg. Not far from Andi is the spot where Princess Tchatchavàdse was taken, with her infant child and all her household, and kept as a hostage for a long time by the Lesghians. Carrying her infant in her arms she was literally dragged through the snow and mud to near Védéno, encouraging her weeping servants by her heroic attitude and brave words. Once in safety from Russian pursuit, her captors treated her with kindness. My two fellow travellers pushed on to Grosni that night, changing their ponies for a carriage at Védéno, where I was induced to stop by the hospitable entreaties of the officer in command, and where a comfortable bed was most welcome. My kind host had a splendid lot of wild goat horns (*capra Siberica*), and told me the pig-shooting was very good. The next day, after seeing the church parade of the troops, I left for Grosni in a *perecladnaïa* or vehicle, which has to be changed with each relay of horses, a most unpleasant contrast to the phaeton in which you remain ensconced with your luggage for days. The drive now passed through a lovely wooded valley, and alongside of the Sounja, an affluent of the Terek, to Ersenoi. Avaria was behind us, and we were now in Tchetchina, where the brave Tchetchenges dwell. A young officer, a grandson of Schamyl, Akbar-Schamyloff by name, who had joined me at Védéno, pointed out to me how good a country this was for game. It was evident that the bush gave splendid cover, and boar and roe were occasionally heard or seen. Cock and snipe, and wild pheasant, also abound. The flat country which forms the valley of the Sounja between us and Vladikavkas to the west, is a paradise for sportsmen, but feverish in summer. I was sorry to part with Akbar-Schamyloff at the rail-road, his way lying towards the Caspian, whilst I was bound for Rostov-on-the-Don. My memories of Dâghestân—a country as yet unspoiled by the "trotter," and where, if you cannot speak Russian or Turkish, you are so little at home, that it promises still to remain a no-thoroughfare—are of the most pleasant. The Russian officers to whom I was recommended by the Governor, Prince A. Bariàtinsky, made the journey comfortable; otherwise, indeed, unless roughing be absolutely the order of the day, it is well-nigh impossible.

INFANTRY FIRE TACTICS.

By Brevet Major W. D. BIRD, D.S.O., p.s.c., A.A.G., Indian Staff College.

NOT the least difficult task of a writer who aspires to deal with the large and complex problems of Infantry Fire Tactics within the scope of a brief article, is to discover a satisfactory definition of the term. The words themselves are familiar enough in military jargon, but what is their exact meaning? Tactics we know are the manœuvres on the battle-field whereby a general seeks to gain the victory. What, then, are Fire Tactics? Not fire manœuvres, as their designation seems to imply, but the principal factor in tactics—the principal means whereby the defeat of the enemy is to be accomplished. "Shooting," in fact, in the words of an American writer, "is to tactics what marching is to strategy."

As there can be no effective fire without sound tactics, so tactics cannot be successful without efficient fire, for with the exception of the final assault, every manœuvre, every movement, undertaken by Infantry in war, has but one aim and object, viz., Fire Action.

Except to state that the main object is to produce the greatest effect at the earliest moment and in the shortest time, no definite rules can be laid down in regard to Infantry Fire Tactics. War is an art, not an exact science, and the exigencies of the moment decide what is best to do. All that can be attempted is to state the pros and cons of certain courses of action.

The application of the principles of Fire Tactics is like that of the principles of Tactics, merely the application of common sense, in this case, to the direction of fire. This is easily said, but not by any means so easily put into practice. It is proposed therefore to enumerate the more important of these principles in relation to Infantry Fire—which after all decides battles, for it is said to be responsible for 75 per cent. of the casualties—and to illustrate their application by examples from military history.

In all actions the questions to be solved in respect of Fire Tactics are: When is fire to be opened? What volume is to be employed? And how long is the fire to be maintained?

The first question will be dealt with later in this article. The third depends on the results produced; for instance, it will be useless to continue firing when it is obvious that the fire is not effective. But on the other hand, the occasion of even a temporary mastery of the enemy's fire should be seized by the assailant to press forward, whilst the defender who has retained fire superiority during the musketry fight at decisive range will probably deliver a counter-attack.

Regarding the second, the volume of fire to be employed is mainly dependent on the number of men available, the object to be achieved, the quantity of ammunition at hand, the frontage available for deployment, the size and range of the target, the intensity of the enemy's fire.

For instance, a great volume of fire by a weak force will deceive the enemy as to its strength, or a feeble fire by a large body of troops

may induce the enemy to accept battle. Great volume generally means great rapidity of fire, and this is not possible when ammunition is scarce. A favourable target demands that advantage should be taken of the opportunity offered, and ammunition freely expended. The longer the range, the greater must be the volume of fire, for the chances of hitting are obviously less than at short distance.

The last factor is the intensity of the enemy's fire. This involves the question of fire superiority, and to gain fire superiority is the aim and object of all Fire Tactics, except when fire is used for purposes of delay or deception. Consequently, if the problem: How to attain Fire superiority, is solved, the more difficult portion of the problem of Infantry Fire Tactics will have been elucidated.

In endeavouring to give a satisfactory reply to the question: How is superiority of Infantry Fire to be attained? one is forced to deal mainly with generalities, for since circumstances alter cases, so in each campaign, nay, in each action, fire superiority is attained by many different means. It is not possible to deal with every combination of circumstances, and therefore only the attainment of fire superiority in a great battle where frontage is limited will be considered.

Fire superiority may be defined as the condition when one side causes a greater percentage of loss amongst the hostile troops than it suffers itself; that is to say, when its offensive power is in excess of its vulnerability. The superiority may, therefore, be temporary or permanent.

In principle there is but one way of ensuring that the enemy's percentage of loss is heavier, viz., by diminishing the effect of his fire. Many subsidiary factors are, however, involved in this principle, and these it is proposed to consider in detail.

Formerly, Infantry formations were devised so as to ensure the maximum of shock as well as fire power. In present conditions shock action cannot, in ordinary circumstances, be applied until fire superiority has been attained, consequently formations are governed by the latter exigency.

Now, in so far as formations are concerned, since it is apparent that, given equal accuracy, the effect of the enemy's fire may be reduced by subjecting his troops to a fire of greater intensity than that which they are delivering, and since the more rifles that can be brought on the hostile line the greater will be the volume of fire, it would appear that to satisfy this condition the firing line should consist of as many ranks of men, one behind another, as can conveniently handle their rifles. But such a formation would, owing to the vulnerable target it offers to hostile fire, defeat its own purpose.

Again, to diminish the effect of hostile fire, troops should, as regards formations, be extended to very wide intervals; but in this order the results obtained by their fire would, at decisive ranges, be negligible.

Consequently, a compromise, which appears to combine the advantages of each system, has, at any rate in theory, been adopted in our Service, and it is ordained that a firing line, of a maximum density of one rifle per yard of frontage, is to be established and maintained by the assailant within decisive range of the enemy's position.

In defence, the density of the firing line is held to depend on the field of fire and cover available, but the volume and accuracy of fire must exceed that of the assailant.

To the soundness of the principle of the dense line, the results of experiments carried out by each successive class of officers at Hythe bear evidence.

On equal frontages are set up lines of small iron-plate falling targets, 1 foot square, at 1 yard interval, and at 7 yards interval, in the proportion of 6 to 1. A number of officers corresponding to the dense line is drawn up 400 or 500 yards from the targets representing the extended line, and *vice versâ*. Fire is opened simultaneously by both parties, and as a target falls the corresponding man of the other party withdraws. Notwithstanding that the extended line is represented by the best shots of the class, it is invariably annihilated in less than one minute.

The experiment is then repeated with firers in the proportion of 3 to 1 and 2 to 1, and the result is always the easy victory of the dense line. A higher percentage of hits to rounds fired is often obtained by the extended line; but the experiment proves that this is no advantage, for the extended line will require more frequent reinforcement. In similar trials at 900 yards range, however, the results are reversed, thus showing that the fire power of the dense line is at this distance less than its vulnerability, and that our system of attack is sound.

The question, whether the assailant should advance in a dense or extended line, is freely debated in the current military literature of the Continent. It is argued in favour of dense lines that they exercise a good moral effect on soldiers, that they are easily controlled, possess great fire power, and great offensive power; moreover, the moral effect on the adversary of seeing a dense line advancing upon him is likely to be considerable. On the other hand, it is pointed out that dense lines are vulnerable, that the moral effect of losses will be great, that they are subject to panics, if defeated fall into disorder, and that the men will be unable to make the best use of cover.

In favour of open lines it is said that casualties will not be noticed, that they are not prone to panic, that best use can be made of cover, that their vulnerability is small, and that a retirement is but a phase of the scope of their action. But against them it is urged that men are left to their own resources and exposed to severe mental strain, that control is difficult, fire power small, and a succession of extended lines are liable to be beaten in detail.

Without entering into further detail, it may, it is suggested, be accepted that, other things being equal, the compromise between the two systems will give the best results, for the Hythe experiments show that the dense line will, at decisive ranges, defeat the extended line, when the lateral space occupied by each is identical; but that at longer distances extended lines seem to possess greater fire power in comparison to their vulnerability, whilst undoubtedly the men can in this formation make better use of cover.

There still remains the question, how the required density of firing line is to be attained and maintained.

When the enemy is well trained, it is held, in our Army, that in ordinary circumstances ground cannot at long or effective ranges be gained in action unless, on the one hand, the hostile line is subjected to a continuous fire, and the accuracy of the enemy's fire thereby diminished, and on the other, the target offered by the assailant is reduced to the smallest possible dimensions by means of widely extended formations.

Continuous fire can only be combined with movement when from first to last the movement of one unit, be it a body of troops or single soldier, is covered by the fire action of another unit. Thus, when the attack is first launched, the advance should be covered by artillery fire, and by the long-range Infantry fire of troops specially detailed. When effective range is reached, ground should be gained under this covering fire, assisted by the mutually supporting action of the firing line; and, finally, reinforcements should advance, covered by the fire of the men established in the fire position.

The important factor in war is the enemy's fire. Troops not themselves under fire will shoot with telling effect; but as soon as they are exposed to effective fire, their shooting falls off, they take hurried aim, or do not aim at all, and think more of saving their own lives than of taking those of their opponents. Hence the value of covering fire, the employment of which, combined with judicious use of ground, alone makes a successful attack possible against a well-armed and trained opponent.

Instances of the employment of covering fire are numerous in modern war. A good example is the advance of the fusiliers of the 74th Regiment against the Rotherberg at Spicheren, as is the recapture of the outskirts of Le Bourget during the siege of Paris by the Germans. Another is Skobeleff's attack on the Turkish positions at Sheinovo; a third is Majuba; another, the capture of San Juan Hill, near Santiago, Cuba, by the Americans. The retirement may also be quoted of the British and Americans after the unsuccessful attempt to capture Tientsin in 1900; and lastly, the capture of the Gyantse jong in Tibet.

Under the protection of this fire, ground will, it is believed, usually be gained in action by the successive advance of lines of widely extended skirmishers, the leading men of which establish themselves as near to the enemy's line as possible, and are reinforced until the necessary density of firing line is attained.

In special cases, however, it may be desirable to deploy a dense firing line from the commencement of the action, *e.g.*, when surprise is inflicted, in a close country, or when the enemy's position can be approached under cover.

Before further considering the question of fire superiority, it may be remarked that modern firearms seem to have modified the relative advantages of the offensive and defensive in the following manner:—

1. The defensive now, as ever, possesses the advantages of choice of position, concealment, facilities for ammunition supply, and knowledge of range.
2. The offensive, as before, can select the point of attack—a great gain in these days of extended lines of battle, and claims certain moral advantages. But, in addition, the long range and containing power of modern rifles confer a power of concealing manœuvre by fire action, and of concentration of fire, which was not previously held. On the other hand, it is universally agreed that modern firearms have greatly enhanced the price which must be paid for tactical mistakes by the assailant.

Now the range at which fire is opened exercises a considerable influence on the eventual attainment of superiority. In the decisive attack, it is generally held that since supply of ammunition must be precarious, and fire can only produce a decisive effect at close

range, and since it is to the interest of the assailant to procure an early decision, and long-range fire will produce delays, the fire of the executive troops should be reserved until close range is reached; but at the same time should not be withheld so long that the losses suffered by the assailant will bring about his defeat before he has commenced to fight.

On the other hand, fire should be opened from even extreme range on a favourable target.

The defensive attitude implies inferiority, and since it is to the interest of the defender to restore the balance of equality, fire action may as a rule be commenced as soon as effect will be produced, and even at longer ranges if it is desired to tempt the assailant to commit himself. In cases, however, where surprise is possible, or the ground near the defender's line is very favourable to fire effect, or when the defender possesses marked superiority in fire power or *moral*, fire may be reserved, and victory sought rather from the rapidity of loading than the ranging power of the rifle.

These views do not, however, meet with universal approval. In favour of the normal use of long-range fire it is argued that the ranging power of the rifle should be utilised; that fire of this nature, owing to the curve of the trajectory, searches trenches; that in favourable circumstances it is very effective; that its moral effect is great; that concentration is easy; the enemy's line can more easily be enfiladed at long range; that long range covering fire is effective; that long-range fire is useful to make the enemy show his hand, to hold him to his position, to deceive him; and that it is advantageous in siege warfare. But, on the other, it is urged that long-range fire delays attack; it involves large expenditure of ammunition; it is trying to eyes and nerves; if ineffective it encourages enemy; the difficulty of ascertaining range is prohibitive to its employment; and the effect of long-range fire is dependent on observation of fire. Moreover, it is said that decisive results are only obtained at short ranges, and as concentration of fire is essential, troops using long-range fire must necessarily be in close and therefore vulnerable formations.

Whether these views are justified or the reverse, it is, however, certain that long-range fire necessitates, as has been stated, concentration, and large expenditure of ammunition, and though collective fire is likely to be effective whenever the target is clearly visible, it would appear that its size must decide whether the expenditure of ammunition likely to be involved to secure adequate results will be justified or not.

Generally speaking, except in special circumstances, the teaching of military history is adverse to the employment of long-range fire by the assailant, and no single instance can be quoted where, except against savages, it has produced a decisive success.

On the other hand, in the war of 1877, the Russians found that when troops opened fire at long range it was a sure sign that the attack had failed. In the Serbo-Bulgarian War of 1885, at the battle of Slivnitza, the Servian left wing abandoned the attack because it had expended all its ammunition at long range. And in 1891, in the Chilian Civil War, the Congressional troops in one action fired from 150-200 rounds a man in three-quarters of an hour in indecisive contest at long range. The Chinese acted in a similar manner at Hai-cheng in the Chino-Japanese War.

In defence, however, where ranges will be known and supply of ammunition comparatively easy, fire may, as already suggested, usually be opened at long range, but must be discontinued if it fails to produce the desired result, as it is trying to the nerves and eyes, and failure to check the enemy will react unfavourably on the *moral* of the defender. Still, even when employed by the defender, long-range fire has never produced decisive results against trained troops. The nearest approach is the loss inflicted on the Prussian Guard at St. Privat in 1870; but nevertheless, these troops are said to have struggled on to within 600 yards range of the village. The Turks in 1877 were great exponents of long-range fire; badly trained troops usually are, but though they delayed the Russians, the latter were always able to come to close quarters. A typical instance occurred during the attack of Kourloff's column on the Turkish positions near Sofia, where the Russians lost 1 General and 200 men in the skirmish line at 2,000 yards range. The Turks were, however, driven off after four hours' fight, when the Russians reached a point about 500 yards from the position.

It must nevertheless be remembered that fire to deceive or contain an opponent is generally delivered at long range.

Reserved fire—the converse to long-range fire—may be defined as fire withheld until the opposing forces come within decisive range of one another, *i.e.*, within the distance at which a soldier may reasonably expect to hit an individual of the opposing force at whom he aims.

The greatest military authorities have, since, and even before, the introduction of arms of precision, favoured the principle that fire should be reserved until decisive range is reached. At Fontenoy, under Count de Saxe, the French employed these tactics. Wellington's Generals also frequently reserved fire. Stonewall Jackson believed that troops should withhold fire until they came to close quarters. In quoting the above authorities it must, however, be remembered that the weapons of their eras were in no sense arms of precision; hence to reserve fire would be almost essential to success.

Finally, Lord Roberts has reiterated the opinion that the battle of the future is to be won by skilful snap-shooting at close range, which seems to imply that the individual should be trained to deliver rapid and accurate fire at decisive range rather than spend time at acquiring accuracy of marksmanship at distances where hitting must, to a great extent, be a matter of chance.

There is no question, however, that to reserve fire entails a severe strain on the *moral* of troops—a strain which only soldiers of the best quality can bear.

The Training Manuals lay down certain rules regarding the opening of fire in attack, to which reference has been made; but in practice it would seem that the volume and accuracy of the enemy's fire, and the conformation of the ground, will decide the question.

At the same time, instructive instances of the success of reserved fire by the attacker may be quoted from military history, such as Bunker's Hill, where the assailants were twice repulsed when fire was opened early, and were successful when it was reserved; the common practice of the Germans in '70 and the Russians in '77, necessitated by the inferior ranging power of their rifle; the action of the Boer left wing at Ingogo, which galloped to close quarters because the men "knew that they need only close to effective range,

and their accurate fire would give them the victory"; the victory of the Allies at Yang-Tsung over the Chinese in 1900.

Examples of the successful reservation of fire by the defender are:—Wolfe's victory at Quebec; the rout of two French divisions by Sherbrooke's Division at Talavera; Ewell's action at Cross Keys in the Shenandoah Valley in 1862; Marye's Hill at Fredericksburg in the same year; the defence of Plevna by the Turks, and of the Shipka by the Russians in 1877; in the same war, Wilhelminoff's action at Sofia and Philippopolis; the action at Kaiping in the Chino-Japanese War of 1894, where the Japanese were nearly beaten by this means; the action at Kailua in Tonkin in 1885; and lastly, the methods of the Boers at Thabanchu, Colenso, and Sand River. At Tacna, however, in the Chilian-Peruvian War of 1880, the attempt of the latter, who were poor troops, to reserve fire resulted in a disaster.

In illustration of other means whereby superiority of fire is attained, certain hypothetical cases will be stated.

For example: If two forces, absolutely identical in every respect, meet on absolutely equal ground, and are both equally well led, neither side will gain fire superiority, except by pure accident.

If, however, other factors remain equal, but the Commander of one side so disposes or manœuvres his troops that he can bring a greater number of rifles to bear on a portion of the enemy's line without weakening his own, he will establish superiority of fire at this point, and, by following up his advantage, may gain the victory.

For instance: A force on the defensive may arrange that a certain line of advance is swept by both frontal and flanking fire, or the assailant may employ the long range of his rifle to concentrate an overwhelming fire on a salient or may envelope a flank of the enemy's position. Napoleon is stated to have remarked that the art of fighting consisted in bringing this converging fire from every direction on a given point. In addition to assuring that, in the above cases, at the given point the volume of fire thus exceeds that of the adversary, a proportion of the shots will be fired from a direction more or less oblique to the enemy's line, and the probability that they will be effective will thereby be enhanced.

An historical example, or series of examples, of this principle may be cited from the Peninsular War, in which the British were victorious by dint of opposing the fire of the line to the shock of the column. It was the same at Waterloo, as Wellington wrote: "The French came on in the same old way, and we beat them in the same old way."

Again, if the two armies are equal in every other respect, except accuracy of fire, it is clear that the force which possesses this advantage will establish its superiority as soon as fire action takes place at a range at which the individual qualities are decisive. This may be taken to be about 500 yards.

With superior accuracy of fire, an inferior force has even at times defeated a superior, and it is claimed by De Wet that Nicholson's Nek is a case in point.

The same arguments may be applied to better control and direction of fire, to greater rapidity of fire, as demonstrated by Frederick the Great's early victories; his men were so well trained that they could fire twice as fast as the Austrians. It has, moreover, been found in a series of experiments that whereas with slow fire the

percentage of hits to rounds is slightly better than with rapid, the number of hits obtained in a given time is double that of slow.

To superiority of armament, such as the Prussians possessed in the war of 1866 (they could shoot lying down, whereas the Austrians had to stand up to load). To better use of cover, of which Majuba may be quoted as an instance. Majuba is also an example of skilful use of covering fire.

Other factors being equal, in two opposing forces the element of surprise often exercises a decisive effect in the struggle for fire superiority, and in this case a dense firing line should be used from the outset of the action. Surprise is perhaps more easily effected by the defender, as Magersfontein, and the experience of the 5th Brigade at Colenso bear evidence. But Majuba and the Rotherberg, at Spicheren, are instances when it materially assisted the assailant.

The last, and perhaps because it involves one of the other methods discussed, the most important, means by which fire superiority may be attained is the establishment of moral superiority, or, to call it by a simpler name, of confidence. It is not a constant factor, and may be present at one stage of a campaign or action and lacking at another.

It was said by Napoleon that in war the moral was to physical as 3 is to 1. And troops possess this moral superiority who are confident in their leaders, their armament, their power to make the best use of cover, and their marksmanship, and whose physical powers are at their highest pitch.

An instance of moral superiority may be quoted in the combat of Echalar, in the battles of the Pyrenees, in 1813, where 1,500 British, elated by success and the personal daring of their General, drove a rearguard of 6,000 wearied and dispirited French from a very strong position. Thus, as Napier wrote:—"The men who five days previously had assailed the terrible rocks of Sauroren with a courage that the hardiest British veterans could barely repel, were now unable to withstand the attack of one quarter of their numbers." But this was not all: "On the same day 80 marauding British soldiers, comrades, and equals of those who captured Echalar, surrendered to some unarmed French peasants, whom in ordinary circumstances," as Wellington said, "they could have eaten up."

Napier concludes by remarking: "What gross ignorance of human nature, then, do these declaimers display, who assert that the employing of brute force is the highest qualification of a General."

To sum up, therefore, fire superiority is attained, other factors being equal, by:—

1. Superiority of numbers.
2. Better leadership.
3. More modern armament.
4. Greater accuracy of fire, and if accuracy is not sacrificed, rapidity of fire.
5. More skilful use of cover.
6. Surprise.
7. Establishment of moral superiority. And judicious employment of covering fire is, for the assailant, an essential condition of success.

THE STANDARDISATION OF ARMY VEHICLES AND STORES.

By Lieutenant P. O. G. USBORNE, R.E.

THE question of the efficient supply of war *matériel* in the field is one of the most pressing importance to-day, and it is so for several obvious reasons.

The necessity for rapidity of movement on the part of Armies has increased immeasurably during the last few decades. The amount of injury inflicted on an enemy in actual battle has, on the other hand decreased, and a vigorous and closely-pressed pursuit has become more essential than ever. This pursuit must not only take the form of harassing the retiring forces for a few days with cavalry, but must consist of a general advance that will give the enemy no time to select and fortify fresh positions. This, of course, means rapidly increasing Lines of Communication, along which supplies must constantly be pushed up.

Furthermore, the forces engaged in modern warfare are so large that they cannot live on the produce of the country as formerly, and all their necessities of life must be carried for them.

All vehicles and war *matériel*, with the exception of food supplies, are forwarded from the base by the Army Ordnance Corps, and the majority of the vehicles when in the field are under the care of the Royal Artillery or the Army Service Corps Transport Companies.

But it is not a correct deduction to say that the question of *matériel* and vehicles is of primary interest to the Army Service Corps and Army Ordnance Corps alone. It is one that vitally affects the efficiency of every unit, and more particularly of such units as have any considerable quantity of technical stores to carry and to maintain in the first line of transport.

The Royal Artillery and the various units of Royal Engineers stand or fall by their transport; and the question of packing Stores economically, replacing them easily, and repairing vehicles instantly is one that should give food for thought to all concerned.

On an occasion in the late War in South Africa, when a forward move was in progress, two telegraph line carts were urgently required, but were unable to move owing to their having 3 out of 4 wheels absolutely unserviceable. The spare wheels carried had been used up long before. The wheels carry a cable winder, and have thirteen spokes, to each of which the winder attaches. It was therefore quite impossible to replace the wheels by an ordinary pattern of the same size with 12 spokes. What actually happened was that the remains of the three broken wheels were taken off and three new wheels produced by next morning by the wheelers of a Transport Company; but this was done to the exclusion of all other work, and wheelers and shops are not always available. As far as I know, there is no reason why a telegraph cart should have a thirteen-spoke wheel in preference to any other.

In proposing the standardisation of vehicles and *matériel*, it is not intended that one or two patterns of vehicle and one or two sizes of packing-case should be adopted for everyone and everything, but rather that some of the "parts" (such as wheels, bolts, poles, etc.) and all the materials from which carts and cases are made should be standardised.

For technical stores and special work, a special type of cart is necessary; common types could be used, but are not so suitable, and undoubtedly the *best* type for any purpose is what is wanted. But standard wheels, axles, pipe-boxes, bushes, washers, bolts, nuts, poles, brakes, etc., should be adhered to, and standard sizes of timber, flat iron, round iron, hooks, eyes, chain, brake screws shafts, etc., should be used in the manufacture of these special carts. There would be no difficulty about this; it is quite as easy to design the brackets under the raves of a G.S. wagon of suitable as of unsuitable iron in order that they could be used to replace or repair other parts on the wagon.

Vehicles.

All vehicles may be divided roughly into five classes, namely:—

a. Those belonging to the Royal Artillery, both for guns and ammunition.

b. Special carts, such as water carts, S.A. ammunition carts, R.E. technical vehicles, ambulances, etc.

c. G.S. wagons, large and small, which belong to the Transport Companies A.S.C. and form the bulk of a Supply Column.

d. Local Transport, either hired or commandeered, depending chiefly for its form on local customs and circumstances. Such transport would be entirely under the A.S.C., and would be required to feed the Advanced Depôt at the head of the Lines of Communication or to fill up the Supply Park.

e. Vehicles propelled mechanically.

All the carts in Classes *a*, *b*, and *c* should be designed with wheels of the same kind, pipe-boxes and bushes identical, and all common fittings interchangeable; they should be constructed out of standard dimensions of steel, iron, and timber, which should be chosen once and for all by a competent committee, with due regard to normal trade and export sizes.

In Classes *b* and *c* above, the number of special vehicles should be kept as low as possible. The G.S. wagon when first introduced was designed with the object of making it a really general service article; this of course is not altogether desirable. An ordinary cart could be used for special stores, but a special cart is probably better. There is, however, a tendency to multiply the number of special vehicles, and this should be discouraged.

There should be a 2-wheel as well as a 4-wheel G.S. wagon. The Scotch cart practically filled the place of the former in the South African War, and was most useful; it could be used for anything and everything, its only disadvantage being that it required careful packing and loading to ensure balance. The old forage cart is apparently to be abolished, and I am not aware what pattern will

take its place; but a vehicle of the Scotch cart type might be used with advantage to replace a great many special carts.

For Royal Engineers these carts could be fitted up in half an hour by a carpenter, to carry tools and a few men, making a far more efficient carrying vehicle than the present tool cart. They could also be rapidly emptied and used for carting earth, stones, bricks, etc., at a drift, or for drawing stores, cut trees, or brushwood for road making. During the South African War it happened that at times a Field Company in camp, having only its First Line Transport with it, had actually no cart available for drawing rations and forage.

Many officers disagree with the substitution of G.S. carts for specials, contending that in this case their carts would often be taken away from them and given to other units. This is true; but, if it is to the benefit of the public service that the transport vehicles of any unit should be available for transfer temporarily to some other unit, it is folly to make them of a type that will preclude their exchange from one purpose to another.

The argument cuts both ways, moreover, for if it is easy to get rid of carts, it is also easy to replace them.

The Army Ordnance Corps, in getting up stores, etc., to railhead, will always get up first the kind that are most generally in use, to the exclusion of anything in the special line. Given that only a certain amount of transport is available, the decision as to which is the most important unit at the moment must rest with the general officer commanding, and to hamper him by making vehicles non-interchangeable is wrong. The argument has another weak point, for the draught animals can be taken away in any case.

Under head *d* :—

Nothing can be done to standardise the local transport of the country, but this will generally be working on the lines of communication.

Mechanical transport is difficult also to standardise at present.

But it may be stated that, nearly all the breakdowns that occurred in the South African War were due to bad roads, soft and greasy surfaces, and lack of fuel or water.

Engines and lorries are purchased from different firms, but they could, of course, be specified to have similar parts, if necessary. This would at present lead to increased expense. Moreover, improvement in this branch is so rapid that for some considerable time to come standardisation in any form might prove rather a drag on progress, and stores would become full of old and obsolete parts.

But standardisation does not so much matter in this case, as mechanical vehicles are not yet suited for the most advanced portion of supply work in the field. Their most economical pace does not agree with that of troops marching. On one occasion in the late war, a convoy of five steam sapper trains went out from Bloemfontein to Lindley with an escort. On the road they were delayed by the enemy, and progress was very slow, the result was that before reaching their destination they were brought to a standstill for lack of coal, although their supply had been intended to take them there and back.

Thus in the end it is on animal transport that we must depend for work with troops in the field, and we should endeavour to perfect its manufacture and organisation.

To sum up, special vehicles should be as few as possible, officers commanding units should try to have as few of these in their transport as possible.

For some purposes, specials must be employed. But these should have the same wheels, axles, and other movable parts as the whole of the rest of the Army transport; and any shaped body or fittings required should be made of standard materials, with fixed sizes of bolts, etc. Repairs on a small scale will then become much easier, and most parts that are likely to break down will be interchangeable.

Materiel.

As regards *matériel*, one obvious fact is, that stores should be packed with some reference to the carts in which they are to be carried.

In a lecture on Transport, given at Aldershot in February last, attention was called to the absolute necessity for transport officers of units studying the question of loading.

The great majority of expeditions undertaken by us on land are in countries where pack transport is employed, and whether it be coolies or camels, the weight of packages is the governing factor. Some of the various forms of pack transport most usually employed are given below, with the weights that they can carry:—

	Gross Weight.	
Chinese coolies	60 — 80 lbs.	
Other coolies	40 — 50 „	
Mules	200 „	Saddle 40 lbs. Stores 160 „
Oxen	250 „	
Camels	800 „	

The most important thing to carry in the field is undoubtedly ammunition, and after that food supplies.

The box containing 11,000 rounds of S.A.A. weighing 80 lbs. has been packed as it is, so as to make a convenient pack-mule load. Its cubic dimensions must therefore give way in this case to the weight. The ordinary box of biscuits weighs some 58 lbs. gross, or 44 lbs. when the wood case is stripped off; holding a weight of 40 lbs. of biscuit; and its dimensions are fairly convenient. Some such dimensions as these should therefore be selected, and one of them, say, the length-wise dimension, be made a standard.

In packing other stores, whatever they may be, there is plenty of scope for making up the weights into some multiple of 40 lbs., and having one dimension the same as the Standard. This would facilitate pack transport loading and vehicle loading, storing in sheds, or holding on board river boats, where weight does not matter, but bulk does. In packing boxes of different odd sizes together, 30 per cent. of cubic space must be wasted at least, unless infinite care be expended.

Boxes of tools and implements, farriers' chests, signalling chests, and countless other things, are made without any reference to each other, or to all vehicles. A signalling chest is made suitable for pack mule transport, and nothing else. A Field Company tool chest is made to fit a Tyler cart, and nothing else; no other form of chest

will fit the cart, nor is the cart any use for anything except the carrying of these particular boxes.

In connection with this matter, some attempt should be made to decrease the weight of all boxes, cases, etc., in the Service. In an ordinary box, containing 40 lbs. of biscuits, the wood cover and tin inside case weigh 18 to 20 lbs.; if some stronger and lighter composition material were used, say Venesta, which is used in some of the United States Army *matériel*, a great saving of weight would be effected. 45 lbs. of biscuit could then be packed in a tin, and case weighing the same as at present, at a slightly reduced cost. That is to say, that in transporting stores, 1 wagon in 9 would be saved.

	£	s.	d.
In the late South African War the average hire paid for an ox wagon with span was per diem - - - - - - -	2	10	0
Add to this boys' rations - - - - -		2	0
Share of conductors' pay (@ 10s. per diem, and one per ten wagons) - - -		1	0
Total - - -	£2	13	0

The net useful weight carried, deducting forage for team, was about 2 short tons; there would therefore, be a saving of £2 13s., or one ox wagon on every 18 tons of *matériel* moved, which gives a saving per diem of 2s. 11¼d. per colonial ton carried. This would have amounted to an enormous sum of money during the war, and the practical increase of available transport would have been 12½ per cent.

Some such material as the above might also be used for S.A.A. boxes, tool chests, heavy ammunition boxes, etc.

To sum up, the standard dimension of the packing cases used should be some factor of the width of the G.S. wagon and G.S. cart.

This standard dimension and a fixed weight, suitable for pack transport, should be adhered to in all packed material.

It is by devoting careful thought and study to what might appear to be details, that a unit can best be maintained efficient in the field, and there is no doubt that the "interchangeability" and easy "repairability" of vehicles, stores, harness, and equipment is one of the first considerations that strikes a student of the subject. This cannot all be done at once; but by fixing the standards now, and adhering to them in future, the desired change would become an accomplished fact in the course of a not unreasonable length of time.

JAPANESE RUSES OF WAR.

By C. v. B. K.

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THERE are two military weapons which the Japanese have elaborated and applied to an extent exceeding anything attempted in previous wars. The first of these is *secrecy*; the second, *ruses of war*. The Japanese system of tactics is characteristically national, as will be apparent if it be closely studied. I will not attempt to criticise it, but will confine myself to a few notes on the two points mentioned above.

In the middle of February last I was with Rennenkampf's cavalry on the extreme right of the Russian Army. A flag of truce arrived and handed in several letters written in unexceptionable Russian. One was to General Rennenkampf, and contained a polite request that, since hostilities did not appear to be imminent, he would allow his officers to meet the Japanese cavalry officers at a picnic. The 20th February was proposed for this entertainment, but the Japanese hosts were ready to put it off till a later date if more convenient.

The proposed picnic actually took place, and the Russian and Japanese officers met on the 21st of February. To understand the point of this little Japanese joke, it is necessary to remember that the great Japanese offensive movement began on the 20th, but against the Russian extreme *left*—not the Russian right. Thus, while both sides were picnicking on the Liau-Ho they were fighting at the Dalin Pass.

A second letter, addressed to the G.O.C. IInd Army Corps, stated that the Japanese were glad to hear of the projected Russian attack, and were quite prepared to hold their own. This letter was despatched just as the Japanese preparations for taking the offensive were completed.

Now, the discipline of the Japanese Army is such that these letters could not possibly have been written and despatched without the sanction of the higher military authorities. And it is only to such high authorities that the plans of campaign are entrusted; the inference is obvious.

I was of the decided opinion, when these letters arrived, that such communications should be politely but firmly declined, as they could do no possible good; but the Russians were so amiable and unsuspicious that they could not bring themselves to reject these friendly overtures. They will be wiser in future, and as they get to know their Asiatic opponents better they will no longer be taken in by stratagems of this sort.

In the Anglo-Japanese Press such episodes are cited as proofs of the politeness and humanity of the Japanese, whereas they are nothing but ruses of war.

During the operations the Russians found that prisoners could not be reckoned on as a source of information as to the enemy's forces and intentions. I was present at the examination of the few Japanese prisoners who were brought in. Nothing was to be learnt from them; they did not refuse to answer, but they shammed stupidity. Japanese are unrivalled at refusing to understand questions which they do not wish to answer.

I often wondered that the Russians did not try severe methods of coercion to make these stubborn prisoners speak, but this was never suggested.

The moral of this is, that our soldiers should be taught that should they ever have the misfortune to be captured they must keep absolute silence.

Besides the refusal of the prisoners to speak, there were other obstacles of getting any information out of them. So far as I could observe, neither the prisoners nor the dead left on the battle-field had any distinguishing marks about their uniforms showing to which regiment or army corps they belonged. So that the capture of individual enemies, alive or dead, afforded no clue whatever to the composition or dispositions of the forces opposed to us.

I will quote a striking instance of the pitch to which the Japanese carried their measures for deceiving us. At Mukden, as is now well known, the battle began with an attack by the Japanese right wing on the Russian extreme left—the Army first commanded by Rennenkampf, then by Alexieff, and finally by Rennenkampf again—the so-called Army of the East. I hurried to the Dalin Pass as soon as the attack began. As it happened, I was present when the Staff were endeavouring to obtain intelligence as to which Army was opposed to us. The Staff interpreter had commandeered my Chinese servant, who happened to be the only educated Chinaman at hand, to assist him in translating the contents of a packet of letters which had just been taken from the bodies of dead Japanese. From these letters it appeared that we had Nogi's Army—or at least portions of it—in front of us. We were confirmed in this belief by the Japanese themselves. At that time we were fighting at very close quarters, not more than 100 to 300 yards apart, and the Japanese used constantly to shout to us in Russian *that they had come from Port Arthur*. I was afterwards taken prisoner, and during the whole period of my captivity I remained under the impression that we had been fighting Nogi's Army.

Judge of my astonishment when at last, on my release, I procured a newspaper, when I found that Nogi's Army had been fighting in an entirely different part of the theatre of war, and that we had been engaged with a newly-formed Army, called the Army of the Yalu!

I need hardly say that at present no information is obtainable in Japan as to the Army of the Yalu, and I do not even know of which divisions it consisted. I heard accidentally, however, that the 11th Division had been with this Army; if so, it must have been detached from Nogi's Army before the fight. It seems certain that the Japanese made material alterations in the disposition of their troops before the battle.

There can be no doubt that their secrecy and cunning were of material assistance to them at Mukden. I am actually convinced that the letters supposed to have been found on the dead bodies were manœuvred into our hands by a trick. I never actually *saw* these supposed dead bodies, and when dealing with the Japanese everything is possible. As for their shouts "that they came from Port Arthur," I have already observed on other occasions that the Japanese preserve absolute silence, especially when attacking, and I have no doubt that these shouts were ordered by superior authority.

As the campaign continues, this and similar stratagems will become "played out."

The same applies to the tricks which the Japanese were constantly playing on the Russian artillery. I read in the Japanese papers that at Matsiandan, where I was present myself, they deceived our gunners by burning puffs and throwing up sand behind hill-tops, so as to resemble the fire of concealed batteries. I then for the first time understood why, on that occasion, the Russians persistently asserted that there were two additional batteries opposed to them besides those which I had succeeded in locating after long and careful observation. I once saw our guns firing at a place where no sign of the enemy was visible; I could not enquire what they were firing at, being at a distant part of the battle-field.

Finally, I would remark that there is a drastic method of procedure which is effective against stratagems and tricks of this kind. And that is, the assumption of a vigorous offensive, against which petty cunning is impotent. An Army which confines itself to a purely passive defence learns to start at every shadow, and is liable to be impressed by these underhand devices.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Captains—R. E. Wemyss, M.V.O., to "Suffolk"; A. W. Ewart to "Doris"; S. E. Erskine to "Leander"; E. F. A. Gaunt, C.M.G., to "Cambrian." Commanders—H. Orpen to "Pandora"; C. V. de M. Cowper to "Psyche"; Hon. G. A. Hardinge to "Æolus"; A. B. Purvis to "Jason."

The first-class battle-ship "Renown," under the command of Commodore the Hon. H. Tyrwhitt, M.V.O., in which the Prince and Princess of Wales are to make their journey to India, left Portsmouth on the 8th inst. for Genoa, in company with the first-class cruiser "Terrible," which is to be her escort. The "Renown" and "Terrible" are due at Genoa on the 18th inst., and the Prince and Princess, with their suite, embark there on the following day, but the "Renown" will not leave the Italian port until the 21st. In the Straits of Messina the "Renown" will be met by the entire Mediterranean Fleet, which will fire a Royal salute as the Prince and Princess approach. The "Renown" will steam through the Fleet, and be escorted to Port Said by the Cruiser Squadron, the battle fleet returning to Malta.

The first-class cruiser "Powerful" commissioned at Portsmouth on the 3rd inst., as flag-ship of Vice-Admiral Sir W. Fawkes, K.C.V.O., on the Australian Station, where she will relieve the first-class armoured cruiser "Euryalus"; Sir W. Fawkes hoisted his flag on board her on the 11th inst., and will leave for her station about the middle of the month.

The first-class battle-ship "Glory," lately flag-ship on the China Station, arrived at Plymouth on the 14th ult., and paid off on the 2nd inst. at Portsmouth; she was re-commissioned on the following day for the Portsmouth Reserve, but is eventually to join the Channel Fleet. The new first-class battle-ship "Dominion" left Portsmouth on the 23rd ult., to join the Atlantic Fleet. The first-class battle-ship "Illustrious," lately attached to Atlantic Fleet, paid off on the 14th ult. at Chatham.

The new first-class armoured cruiser "Roxburgh" completed to sea-going complement on the 5th ult. at Chatham, for service with the First Cruiser Squadron, where she will take the place of the first-class armoured cruiser "Kent." The second-class cruiser "Arrogant," left Plymouth on the 15th ult., to join the Atlantic Fleet, where she takes the place of the second-class cruiser "Doris," which paid off on the 4th ult. at Devonport. The second-class cruiser "Æolus," lately the flag-ship of the Rear-Admiral Commanding at Queenstown, paid off on the 7th ult. at Devonport, and re-commissioned the following day for service with the Reserve Squadron. The third-class cruisers "Pioneer" and "Pyramus," commissioned at Sheerness for service on the Australian Station, and left Plymouth in company on the 18th ult., for their destination; the "Pioneer" is to relieve the third-class cruiser "Mildura," and the "Pyramus" is to be employed as training-ship for Naval Reserve.

Launch.—The new first-class armoured cruiser "Natal" was launched on the 30th ult., from the Yard of Messrs. Vickers, Sons, and Maxim, at Barrow-on-Furness, the launching ceremony being performed by the Duchess of Devonshire. The dimensions of the "Natal," which is a sister-ship of the "Achilles," "Cochrane," and "Warrior," are as follows:—Length, 480 feet; beam, 73 feet 6 inches; displacement, 13,550 tons, on a mean draught of 27 feet. Her armament will consist of six 9·2-inch and four 7·5-inch guns, the muzzle energies of which are 24,000 and 11,500 foot-tons respectively. Of the 9·2-inch guns, four are placed at the four corners of the citadel, while of the two others, one is mounted on the forecastle, and the other on the poop in gun-houses with 6-inch armoured barbettes; the four 7·5-inch guns are mounted in casemates on the upper deck, also protected by 6-inch armour; she carries, in addition, two 12-pounders, twenty-four 3-pounders, five Maxims, and two 18-inch submerged torpedo-tubes on the broadside and in the stern. Protection is afforded by an armour belt extending the whole length of the ship, and from 6 feet below the water-line to the top of the citadel, ranges in thickness from 6 inches—over two-thirds of the broadside—to 3 inches at the extremities. The machinery of the "Natal" is of the standard Admiralty pattern of four-cylinder triple-expansion type, all parts being interchangeable with corresponding parts of the machinery of sister-ships. The machinery is estimated to develop 23,500-I.H.P., at full power, making 135 revolutions per minute, and giving a speed of 22·5 knots. The value of the machinery is distinctly lessened by the fact that, although the late Boiler Committee's last report cancelled their previous advice that "one-fifth power of all ships should be generated in cylindrical boilers," this advice has been adhered to in these new cruisers because the specifications had been issued before the committee's final report was received. It seems a pity, therefore, that the Admiralty did not avail themselves of the opportunity to fit all these vessels with a complete installation of water-tube boilers. As it is, the "Natal" will have twenty Yarrow and six cylindrical boilers.

Steam Trial.—The new first-class armoured cruiser "Argyll" has completed her trials, the result being as follows:—

Power.	One-fifth.	Four-fifths.	Full.
Duration of trial (hours)	30	30	8
Pressure of steam in boilers (lbs.)	180	203	194
Air pressure in stokeholds (inches) ...	Nil	0·5	1·02
I.H.P., gross	4,726·	15,108·	21,190·
Revolutions per minute, mean	86·4	126·15	138·9
Speed of ship (knots)...	13·9	20·8	22·38
Coal consumption per I.H.P. per hour (lbs.)	1·94	1·82	2·2

The draught of water was 25 feet, or 3 inches greater than that which it was intended the trials should be run at, so that the conditions are favourable to the attainment of better results later on, and in addition to the deeper draught of water, the ship had not been in dock for some little time.—*Times, Naval and Military Record, etc.*

FRANCE.—The following are the principal appointments which have been made: Rear-Admirals—L. R. Saget de la Jonchère to be Director of the Superior School of the Navy; H. L. Manceron to Command of the

2nd Battle-ship Division of the Mediterranean Fleet; J. Bellue to be Commander-in-Chief of the Tunis Naval Division; L. R. De Marolles to be Commander-in-Chief of Naval Division in Indo-China; E. J. Boisse to be Second-in-Command of the China Squadron. Capitaines de Vaisseau—C. P. Rihouët to "Condé"; B. S. Sourrieu to "Desaix"; J. B. Degouy to "Infernet"; L. J. Lormier to "D'Entrecasteaux"; P. Adigard to "Iéna"; H. Dutheil de la Rochère to "Bretagne"; M. A. Cros to "Charlemagne"; D. M. Bonifay to "Jauréguiberry"; R. C. Le Nepvon de Carfort to "Henri IV."; M. E. Laurent to "Amiral-Tréhouart." Capitaines de Frégate—A. F. Fatou to "Léger," and Command of 5th Mediterranean Torpedo Flotilla; A. E. Le Troter to "Calédonien"; M. J. Bô to "Tempête"; Z. A. Schwerer to "Cassini"; P. L. Simon to "Forbin."—*Journal Officiel de la République Française.*

Vice-Admiral Caillard struck his flag on board the "Masséna," as Commander-in-Chief of the Northern Squadron, on the afternoon of the 15th ult., and the flag of Vice-Admiral Gigon, his successor, was hoisted on board on the following day with the usual ceremony. Vice-Admiral Gigon has selected Capitaine de Vaisseau P. Forestier as his Chief of the Staff. Rear-Admiral Bellue, who has been appointed to the Command of the Tunis Naval Division in place of Rear-Admiral Aubert, is one of the young officers on the flag-list, being only 56; he will hoist his flag on board the "Tempête" at Bizerta, and as he is an officer with a high reputation and full of energy, it is fully expected that the work of developing this important base for the fleet will be pushed on with the same rapidity as has been the case under his predecessors.

Rear-Admiral Manceron, who will hoist his flag on board the "Iéna" on the 5th November in succession to Rear-Admiral Barnard, is also one of the younger flag-officers on the list, being in his 57th year; he has been Director of the Superior School of the Navy, and is temporarily during the duty of Chief of the General Staff at the Ministry of Marine.

Rear-Admiral De Marolles, who is the first flag-officer to be appointed to the Command of the Indo-China Division, is the youngest officer of his rank in the Navy, being only 52 years of age; he served as Chief of the Staff to Sir E. Seymour, during the attempted march to the relief of the Legations at Pekin, and was highly commended by that distinguished officer for his services. He will hoist his flag on board the second-class battle-ship "Redoutable" at Saïgon, and all the Naval Establishments will also be under his charge.

As is now customary, the ships of the Northern Squadron were placed on reduced complements from the 1st inst., for the six winter months, with the exception of the armoured cruiser "Léon Gambetta," which temporarily has her full sea-going effective, as she is to convey the President of the Republic from Lisbon to Bordeaux at the conclusion of his visit to Spain and Portugal.

The first-class armoured cruiser "Desaix" has arrived at Brest from Toulon, where she is to take the place of her sister-ship, the "Dupleix," as flag-ship of the Atlantic Division, whose machinery requires extensive overhauling and repairs. The place of the "Desaix" in the Mediterranean Fleet will be taken by the new first-class cruiser "Condé."

The departure of the first-class cruiser "D'Entrecasteaux," the new flag-ship of the Senior Officer of the Indian Division, has been delayed owing to the discovery of extensive defects in her boilers.

The Loss of the "Sully."—The Minister of Marine has received from Vice-Admiral Richard, the Commander-in-Chief of the China Squadron, the following account of the state of the French armoured cruiser "Sully," which ran on a rock off the coast of Indo-China some time ago:—"The vessel has for several days been showing signs of increasing weakness and is sinking by the stern. As this is the typhoon season, the work of trying to refloat her has had to be abandoned. The few fittings that remain in her are now being removed." A later telegram states that news has reached Saïgon that the "Sully" has sunk. The vessel has broken in half and slipped into deep water, only the funnels being visible. The men on board had left the vessel, and all removable material had been taken off.

The place of the "Sully" is to be taken by a practically sister-ship, the "Dupetit-Thouars," which left Toulon on the 15th ult. for her station; at Colombo she is to pick up the torpedo-transport "Foudre," and the torpedo-flotilla accompanying her, and will convoy them to Saïgon.

Launch.—The first-class armoured cruiser "Jules-Michelet" was launched on the 31st August from the dockyard at Lorient. Her dimensions are as follows:—Length, 489 feet; beam, 70 feet 2 inches; displacement, 12,750 tons, on a mean draught of 26 feet 3 inches. Protection is afforded by a complete armour belt of hard steel, with a thickness of 5·9 inches in the centre, and 3·94 inches at the extremities, extending 7 feet 6 inches below the water-line, over a plate thickness of 0·79 inch. Above the belt the armour will have a thickness of 4·9 inches, to a height of 7·54 feet above the water-line. Forward, this armour will be carried as high as the casemates of the 6·48-inch guns. The two armour decks will start respectively from the top and bottom of the armour belt, and will form with it a caisson divided into a number of water-tight compartments. The armament will consist of two 9·4-inch guns in the fore turret, and two 7·6-inch in the after, the turrets being protected by 8-inch armour, with 5-inch hoists; twelve 6·48-inch guns in casemates; and a number of 2·56-inch and 1·85-inch guns; also five torpedo tubes, two of them submerged. Her three engines of triple expansion will develop a total of 29,000-H.P. She will have 28 Du Temple-Guyot small tube boilers, and four funnels, 69 feet in height. Her speed with be about 22·5 knots. When launched, she was already fitted with her propeller shafts and her false keels, and her upper decks were finished. Her launching weight was 5,000 tons, representing 60 per cent. of her construction. She was laid down 1st June, 1904, and should be ready for her trials in 1907. Her cost is estimated to be 30,842,731 francs (£1,233,709).

In the case of her sister-ship, the "Jules Ferry," some modifications were introduced in the designs of the boilers, by which the grate surface was augmented and the coal consumption per square foot of grate surface per hour was reduced from 44·64 lbs. to 38·3 lbs.; in the boilers of the "Jules Michelet," the proportion of grate surface to heating surface has been still further reduced, and at the same time, the number of tubes in a boiler has been decreased by one-twentieth, with the result, it is hoped, of reducing the coal consumption to 33·38 lbs. per square foot of grate surface per hour.

Steam Trial.—The new first-class armoured cruiser "Léon Gambetta" has successfully concluded her steam trials. At the first trial:—Six

hours, with four boilers and the central engine only, developing 2,500-H.P., the results not given. Second trial :—Eight hours, engines at 6,500-H.P., half the fires lighted, two lateral propellers working, speed, 15 knots; the engines really developed 7,116-I.H.P., and the speed was 15·5 knots, the engine-room staff was only two-thirds of the proper complement. Third trial :—Eight hours, engines at 11,000-H.P., three-fourths of the fires lighted; actual result : engines developed 10,559-H.P. only, giving a speed of 18 knots. Fourth trial :—24 hours, full power under natural draught; result : the engines developed 16,190-H.P., giving a speed of 20·5 knots; the whole of the 28 Niclausse boilers being in use, and the speed obtained may be taken practically as the cruising speed for any length of time. Before the fifth trial the "Léon Gambetta" steamed at 14 knots during the cleaning of her furnaces. Fifth trial :—Three hours at full speed with the engines at 25,500-H.P.; actual result : engines developed 25,720-I.H.P., speed 22·4 knots. Sixth trial :—One hour with three-fourths of her fires lighted and steaming her utmost under these conditions. Result : 17,688-H.P., speed 20·5 knots.

The Loss of the "Farfadet."—M. Laubeuf, designer of the French submersible class of submarine, has been interviewed, and gives the following as a possible explanation of the cause of the disaster to the "Farfadet" :—

"Admitting that the commander of the 'Farfadet' was unprepared for the sudden dive which she made, and observing that he is a very capable officer, with 18 months' experience of submarine navigation, why was he so unprepared?

Possibly, the following may be the explanation :—There are, in the Bizerta Lake, and especially near the Arsenal, where the accident took place, currents of brackish water, formed by the fresh-water streams descending from Wady Tindya. These, naturally, lower the density of the salt water, and consequently, also reduce the buoyancy of a vessel. It is quite possible that the 'Farfadet' encountered one of these currents of brackish water, and the commander may have been misled as to the reserve of buoyancy, he may have thought that he had 100 kilos. to spare, when, in fact, he had no margin at all; this hypothesis would explain the diving of the vessel taking place with greater precipitation than in ordinary water."

Contrasting the case of the "Farfadet" with that of the English "A 8," M. Laubeuf thinks that the accident to the former points to no defect either in buoyancy, power of maintaining equilibrium, or general habitability. The English boat, on the other hand, was apparently wanting both in longitudinal and transverse stability, since she went down bow first, turning over on her side as she sank.

M. Laubeuf unreservedly condemns the entire absence of appliances for dealing with an accident to a submarine, which entailed the humiliation of calling in the aid of a German vessel to raise the unfortunate "Farfadet." He considers it absolutely necessary that at Brest, Cherbourg, and the principal ports generally, a vessel should be held in readiness, fitted with all the apparatus necessary for the prompt succour of a submarine in distress. He added, however, that M. Thomson, the energetic Minister of Marine, had already taken steps to provide such vessels at the ports.

The Submarine and Torpedo and Fixed Defence Local Committees.—M. Thomson, Minister of Marine, on taking office appointed a Commission

to consider the position of the Submarine Committees in each naval port, and of the torpedo and fixed defence sections. On the report of this Committee a decree has now been issued, by which it is ordered that the General Staff of the Navy in Paris will henceforth be charged with the control of all questions relative to the *matériel* of torpedo-boats and projectors, and will issue orders to the permanent experimental committee of submarine defences to be established, relative to the carrying out of all trials and experiments, and the fixing of the needs and requirements of the fleet, ports, and *points d'appui*.

The torpedo flotillas and fixed defences become executive commands, either under the maritime prefect of the arrondissement, or the naval commanders in Corsica, Algeria, etc.

The torpedo schools are placed under the Rear-Admiral attached to the staff of each port, and the Inspector-General of torpedo-flotillas (Admiral Fournier) will also inspect the submarine flotillas and fixed defences.

As regards the technical and administrative services of torpedoes at head-quarters, these are now placed under the Direction of Naval Constructions, and the Director of Naval Ordnance; the automobile torpedoes and accessories, such as the Obry apparatus and launching tubes, etc., are also now to be under the department of the Direction of Naval Constructions.

Fixed torpedo mines, etc., are to be under the Naval Ordnance Department; these departments having better means of taking efficient charge of these matters than were possessed by the former submarine committees.

Economy will result from these changes, as the suppression of the five submarine committees in the naval ports will effect a saving of money, and also set free a number of officers for the general service of the fleet.

The Obry Apparatus.—The Superior Commission for torpedoes and mines has been studying, among other questions, that most interesting one of the Obry torpedo apparatus. The experiments which have been carried on with torpedoes furnished with this apparatus at Toulon during the last five years have proved that the apparatus is capable of giving 95 per cent. of good trajectories. With the new torpedoes, which have a range of 2,000 yards or more, its importance becomes even greater, and up to 1,500 yards, except from errors of sighting, the percentage of hits ought not to be less. But the sighting, when ships are under steam, is just when errors are made, which spoil the firing and prevent good trajectories from resulting in good hits. However, with the Obry apparatus, it ought to be possible to hit a ship which kept on her course at an even rate of speed, either from *terra firma* or from torpedo-boats lying in wait.

Of 46 torpedoes discharged from the Obry tube before the Commission, 43 struck within 10 yards of the mark, and the remaining three within between 10 and 50 yards of it. Not one has been hopelessly wide of the mark, or gone so far astray as to be dangerous to vessels clear of the range. This cannot be said of torpedoes discharged from other tubes, one of which only recently struck the "Hallebarde," torpedo-boat destroyer, and made a hole on her starboard side. Accidents of this kind have been rather frequent for some time past. The favourable results obtained show that all that is required is that the apparatus should be carefully manipulated and not be entrusted to the hands of unskilled persons.

Accident to the "Gymnote."—What might have been a very serious accident occurred recently on board this submarine, which was lying on a barge alongside the quay of the Canal of the Mourillon Arsenal. On the morning of the 15th ult., two petty officers went down into her, without first properly ventilating the chamber, which had been closed for the night. After turning on the lights, they commenced work; one of the men wishing to change one of the batteries, turned a commutator, causing a spark, which produced an explosion, due probably to hydrogen gas, which had escaped during the night from the accumulators. The two men were seriously burnt, several of the accumulators were destroyed, and the fore hatch blown up, but the vessel was otherwise uninjured. The "Gymnote" is one of the oldest of the submarines, having been built as long ago as 1888, at Toulon.—*Le Yacht, Le Temps,* and *Le Moniteur de la Flotte.*

GERMANY.—The following are the principal promotions and appointments which have been made: Vice-Admirals—Büchsel, von Arnim to be Admirals. Rear-Admirals—Breusing to Command of Cruiser Squadron; von Holtzendorff to be Second-in-Command of 2nd Squadron of Active Fleet. Capitäns zur See—Jacobsen to "Braunschweig"; Bachmann to "Elsass"; von Dambrowski to "Kaiser Karl der Grosse"; Kinderling to "Wittelsbach"; Graf von Spee to "Kaiser Friedrich III."; Pohl to be Commodore while acting as Second-in-Command of the 1st Squadron; Winkler to be Commodore while acting as Second-in-Command of Cruiser Division.

Steam Trials. — The new first-class battle-ship "Elsass," on her measured mile trial, made a mean of 18·7 knots, with the engines making 114·9 revolutions and developing 16,812-I.H.P. On her 6-hours' forced-draught trial, with the engines making 112·6 revolutions and developing 16,685-I.H.P., a mean speed of 18 knots was maintained. At the 24-hours' coal-consumption trial, with the engines developing 11,559-I.H.P., a mean speed of 16·5 knots was maintained, with a coal consumption of 789 gr. (1·73 lbs.) per I.H.P. per hour.

The new first-class battle-ship "Preussen" has also been carrying out her trials successfully. With the engines developing 18,374-I.H.P., and making 116·7 revolutions, a mean speed of 18·6 knots was attained on the measured mile. With the engines developing 9,717-I.H.P., and making 97·7 revolutions, a mean speed of 16·4 knots was maintained. On the 24 hours' coal-consumption trial, with the lateral engines developing 6,800-I.H.P., the coal consumption was 0·72 kg. (1·58 lbs.) per indicated horse-power per hour.

The third-class cruiser "München" has completed her trials successfully. At her 24 hours' full-speed run with the engines making 121·65 revolutions and developing 7,164-I.H.P., a mean speed of 20·4 knots was maintained with a coal consumption of 873 gr. (1·92 lbs.) per I.H.P. per hour; at a coal-consumption 24-hours' trial with the engines making 122 revolutions and developing 7,238-I.H.P., the mean speed was 20·4 knots and coal consumption 873 gr. (1·92 lbs.) per I.H.P. per hour. At the full-speed trial on the measured mile, with the engines making 143 revolutions and developing 12,388-I.H.P., the mean speed was 23·45 knots; coal consumption not given.

The new third-class cruiser "Lübeck" has been undergoing her trials. She is fitted with turbine engines, but the success attained did not equal

expectations, as the speed was not greater than that of her sister-ships, the "Hamburg" and "Bremen," which are fitted with the ordinary reciprocating engines, while the consumption of coal up to a speed of 16 knots was greater. The trials were carried out with two small screws fitted to each of her four propeller shafts, and she is now to go into dock to be fitted with larger screws. In changing from going ahead to going astern, the "Lübeck" was slower than her sister-ships with pistons. The engines of the "Lübeck" require considerably less oil, which compensates somewhat for her greater coal consumption at moderate and slow rates of speed. During a 24-hours' run, with the engines developing 7,600-I.H.P. and making 670 revolutions, a speed of 20·5 knots was maintained, with a coal consumption of 0·9 kg. (1·98 lbs.) per I.H.P. per hour; with the engines developing 9,500-I.H.P., a speed of 21·5 knots was maintained, with a coal consumption of 1,075 gr. (2·149 lbs.) per I.H.P. The weight of the turbine engines is 77·5 tons less than the reciprocating engines of her sister-ships, and the ships seems to be steadier in a seaway. It is interesting to note that in the British third-class cruiser "Amethyst," which is fitted with turbines, the economy of fuel was progressive from 14 knots up to full power, when she completely distanced her sister-ships, the "Diamond" and "Topaze," both in speed, power, and economy of fuel.

The new third-class cruiser "Berlin" has also concluded her trials successfully. With the engines making 115 revolutions and developing 7,121-I.H.P., a mean speed of 21 knots was maintained during a 24-hours' trial. During a 6-hours' forced-draught trial, with the engines making 127·6 revolutions and developing 10,857-I.H.P., a mean speed of 22·6 knots was maintained, and on four runs on the measured mile a speed of 23·26 knots was reached.

The third-class cruisers "Lübeck" and "Hamburg," which are sister-ships—except as regards their machinery, the first-named being fitted with turbines—are carrying out a series of comparative trials. At the first trial, at a mean speed of 19 knots, the coal consumption of the "Lübeck" was 167·87 tons, and of the "Hamburg," 170·78 tons, during a twenty-four hours' run.

The torpedo-boat "S125," also fitted with turbine engines, has resumed her trials, and this time with greater success; in a three-hours' run she maintained a speed of 27·8 knots, and in four runs on the measured mile the mean speed was 28·9 knots, the highest speed attained being 29·5 knots, the boat having been built for a speed of 27 knots. At a further forced-draught 3-hours' trial a mean speed of 26·6 knots was maintained.

Dockyard Notes and New Ships.—It is intended for the future that the Imperial Dockyards should be used more as repairing yards for the fleet than as building yards. The result is that the greater part of the ships to be laid down under the present year's programme will be built at private yards. Thus the new battle-ship "Q" has just been laid down at the Krupp Germania Yard, Kiel; her sister-ship, "R," will be built by the Schichau Yard, Danzig; and the new first-class armoured cruiser "D" has been allotted to the firm of Blohm and Voss, at Hamburg.

During 1906 the number of battle-ships in the fleet will be brought up to 38, as fixed by the naval programme of 1900; but the construction of battle-ships will not then cease, as it will be necessary to lay down new ships to take the place of the "Sachsen" type, which were built in 1877-80, the German Admiralty having laid down the rule that battle-ships

shall be considered obsolete after 25 years' service. The new first-class battle-ships "Preussen" and "Hessen," of the 1902 Programme, are ready; the new first-class armoured cruiser "Roon," begun the same year, is still under construction; the new first-class armoured cruiser "York," laid down in 1903, is ready for her trials; but with the battle-ships "Deutschland" and "Lothringen" not so much progress has been made. Of the ships begun in 1904, only the third-class cruiser "Leipsic" has been launched. The vessels still on the stocks are the four battle-ships "O," "P," "Q," and "R," building at the Vulcan Works, Stettin, the Imperial Dockyard, Wilhelmshaven, the Germania Yard, Kiel, and the Schichau Yard, Danzig, respectively, as already stated, the last two are in the very earliest stages of construction; the two first-class armoured cruisers "C" and "D," at Bremen and Hamburg respectively; the three third-class cruisers "O," "Ersatz Alexandrine," and "Ersatz Meteor"; one transport for submarine mines; one transport for ammunition; and one surveying-vessel. The third-class cruiser "O" is being built at the Imperial Dockyard, Danzig, as is also the "Ersatz Alexandrine," while the "Ersatz Meteor" is being built at Kiel; it has not yet been made known where the two third-class cruisers of this year's programme, the "Ersatz Wacht" and the "Ersatz Blitz," are to be built. "O" is to be somewhat larger than her sister, displacing 3,400 tons, as against 3,200 tons of the "Berlin" class.

The third-class cruiser "Ersatz Alexandrine" was launched on the 23rd ult. from the Imperial Dockyard at Danzig, and received the name of "Danzig." Her dimensions are as follows:—Length, 340 feet 6 inches; beam, 43 feet 4 inches; displacement, 3,250 tons, on a draught of 16 feet 5 inches. There will be a 2-inch armoured deck, and the conning tower will also be protected by 3-inch armour. The armament will consist of ten 4·1-inch Q.F. guns, ten 1·45-inch Q.F. guns, with 4 machine-guns and 2 submerged torpedo-tubes forward for 18-inch torpedoes. The engines are to develop 10,000-I.H.P., giving a speed of 22 knots, while the coal capacity is 800 tons, giving a radius of action of 5,000 miles at economical speed.

The naval authorities are considering the question of building two new entrances into the Kaiser Wilhelm Canal near Brünsbüttel and Holtenau. The canal locks now in use are 500 feet in length. It is known that the new battle-ships, in view of their increased displacement, will be appreciably longer than those now under construction, and as the canal locks cannot be made longer, it will thus become necessary to build two others at the entrance and exit of the Kaiser Wilhelm Canal, and each will have to be at least 667 feet long. At Brünsbüttel the Canal Board has been negotiating for the purchase of land required for a new lock. At Holtenau the Canal Board possesses a large tract of land lying to the southward of the mouth of the Canal, and the new lock will be built doubtless on the south side of the entrance.

The naval authorities are establishing another station for wireless telegraphy near Aarösund, on the Little Belt. Hitherto it has not been possible to communicate by wireless telegraphy between the stations on the mainland and any point northwards of Kiel as far as the Danish frontier. This extension is called for by the fact that, owing to the increase of the German Navy, the waters lying between Kiel and the Little Belt will see much more of German war-ships in future. Germany will thus possess five stations for wireless telegraphy in the Baltic region; these stations are at Rixhöft, Arkona, Marienleuchte, Vülk, and Aarösund. —*Marine Rundschau* and *Neue Preussische Kreuz-Zeitung*.

UNITED STATES.—*Launch of the "Minnesota."*—The first-class U.S. battle-ship "Minnesota," of some 16,000 tons displacement, was successfully launched from the yards of the Newport News Shipbuilding and Drydock Company, at Newport News, Va., on 8th April.

The "Minnesota" belongs to a class of battle-ships which represents the most advanced ideas in modern naval construction. With her sister ships, the "Vermont" and "Kansas," which are also in progress of construction, the "Minnesota," when completed, will be one of the most powerful battle-ships afloat. The hull of the "Minnesota" is of steel throughout, and fitted with docking and bilge keels. The general dimensions of the vessel are as follows:—Length of load water-line, 450 feet; beam, extreme, at load water-line, 76 feet 10 inches; displacement on trial, not more than 16,000 tons; mean draught to bottom of heel at trial displacement, 24 feet 6 inches; gross draught, full load, about 26 feet 9 inches; total bunker capacity, coal, about 2,200 tons; coal carried on trial, 900 tons; feed water carried on trial, 66 tons; trial speed at sea for four hours, 18 knots.

The main battery consists of four 12-inch breech-loading rifles, eight 8-inch breech-loading rifles, twelve 7-inch breech-loading rifles. The secondary battery is twenty 3-inch 14-pounder Q.F. guns, twelve 3-pounder semi-automatic guns, six 1-pounder automatic guns, two 1-pounder semi-automatic guns, two 3-inch field pieces, two machine guns, calibre ·30, six automatic guns, calibre ·30.

This battery will be mounted as follows:—The 12-inch guns in pairs in two electrically-controlled, balanced, elliptical turrets on the centre line, one forward and one aft, each with an arc of fire of about 270°. The 8-inch guns in pairs in four electrically-controlled, balanced, elliptical turrets, two on each beam, at each end of the superstructure. The 7-inch guns in broadside on pedestal mounts on the gun deck, behind 7-inch armour, each gun being isolated by splinter bulkheads of nickel steel of from 1½ to 2 inches thick; forward and after guns arranged to fire right ahead and right astern respectively; other 7-inch guns to have the usual broadside train. The guns of the secondary battery in commanding positions, having a large arc of unobstructed fire, and protected wherever practicable. All the 7-inch guns will be so arranged that their muzzles train inside the line of the side armour, thus leaving a clear and unobstructed side when it is desired to go alongside a pier or vessel.

Arrangements will be made whereby the 3-inch guns on the main deck can be quickly and conveniently dismounted, housed and secured.

The hull will be protected at the water-line by a complete belt of armour 9 feet 3 inches wide, having a uniform thickness of 9 inches for about 285 feet amidships, forward and aft of which points the thickness is gradually decreased to 4 inches at the stem and stern.

The lower casemate armour will extend to the limits of the magazine spaces and reach from the top of the water-line belt to the lower edge of the 7-inch gun ports on the main deck, and be 7 inches in thickness, the athwartship bulkheads at the ends of this casemate being 6 inches thick.

There is a complete protective deck extending from stem to stern, flat amidships, but sloped at the sides throughout, and sloped at each end. It is built up of twenty-pound plating throughout, with nickel steel of forty pounds on the flat and of 100 pounds on the slopes. Nickel steel protection is also fitted, hatch covers, gratings, etc.

Cofferdams about 30 inches thick and extending from protective to berth deck level will be worked from end to end of the vessel, these

cofferdams being extended above the berth deck, forward and abaft the transverse armour, to a height of about 36 inches. The cofferdams will be packed with cellulose or other approved water-excluding material.

The magazines and shell rooms are so arranged that about one-half the total supply of ammunition will be carried at each end of the ship. Magazine bulkheads adjacent to heated compartments, such as fire rooms, engine rooms, and dynamo rooms, will be arranged with air spaces.

The engines will be of the vertical twin-screw, four-cylinder, triple-expansion type, of a combined I.H.P. of 16,500. The steam pressure will be 250 lbs.; the stroke will be 4 feet. Each engine will be located in a separate water-tight compartment.

There will be twelve boilers of the Babcock and Wilcox type, placed in six water-tight compartments. They will have at least 1,100 square feet of grate and 46,750 square feet of heating surface, and must be able to furnish steam for the main engines and all the necessary auxiliary machinery and other steam machinery throughout the ship with an average air pressure in the fire rooms of not more than one inch of water. There will be three funnels, each 100 feet high above the base line.

The vessel has all the up-to-date auxiliary machinery and electrical devices, voice pipes, telephones, buzzers, gongs, indicators, etc.

There will be a lower bridge both forward and aft, and a flying bridge forward, according to the latest practice. On the flying bridge is fitted a screen of bronze for the protection of the men at the wheel, and there will also be a bronze chart-house forward.

There will be steel masts forward and aft, the foremast having an upper and lower top, the mainmast a lower top only. Masts are arranged for wireless telegraphy. There will be one signal yard on each mast; also a search-light platform forward and aft, with a crow's nest on the foremast.—*U.S. Army and Navy Journal.*

Progress on Naval Vessels. — Excellent progress is being made with the ships now building for the Navy. The reports show that of the battle-ships, "Rhode Island" and "Virginia" are nearest completion, the one being 84 per cent. and the other at 83·74 per cent. The greatest progress made on the battle-ships was in the case of the "Vermont," building by the Fore River Company, and the "Kansas," building by the New York Company, each of which advanced 4·6 per cent. The "Virginia" was advanced nearly 3 per cent. in the month. In March the progress on the "Louisiana," building at Newport News, was 2·36 per cent., making that vessel 71·90 per cent. completed. This is 1·66 per cent. nearer completion than is the battle-ship "Connecticut," which is being built at the New York Navy Yard, in competition with the "Louisiana" at the private yard. The rate of progress on the "Connecticut" in March, however, was 3·07 per cent., being ·71 per cent. more than the progress on the "Louisiana" during the same time.

The stage of work on the other battle-ships is stated as follows:—"Nebraska," 69·31 per cent.; "Georgia," 76·44; "New Jersey," 79·4; "Vermont," 43·4; "Kansas," 48·1; "Minnesota," 61·76; "Mississippi," 24·39; "Idaho," 22·27; and "New Hampshire," 1·5.

The armoured cruisers "West Virginia" and "Maryland" are completed and ready for commission. The condition of the other armoured cruisers is stated as follows:—"California," 73·5; "South Dakota," 71·3; "Tennessee," 69·45; "Washington," 70·2; "North Carolina," 2·15; "Montana," 2·01. Of the protected cruisers, the "St. Louis" is 60·6

per cent. completed, the "Milwaukee," 69·8, and the "Charleston," 92·5.

The training-ships "Cumberland" and "Intrepid" are practically completed, and the gun-boats "Dubuque" and "Paducah" are also nearing completion. The training-brig "Boxer," built at the Navy Yard, Boston, is completed and ready for commission.—*U.S. Army and Navy Journal.*

MILITARY NOTES.

HOME.—The following are the principal appointments which have been made :—

General — General Sir F. W. E. F. Forestier-Walker, G.C.M.G., K.C.B., to be Commander-in-Chief of the Forces at Gibraltar, and to be Colonel of the King's Own Scottish Borderers.

Major-Generals—Major-General G. Salis-Schwabe, C.B., to be Colonel of the 3rd (Prince of Wales's) Dragoon Guards. Major-General A. S. M. Browne, from the 3rd (Prince of Wales's) Dragoon Guards, to be Colonel of the 2nd Dragoons (Royal Scots Greys).

Colonel—Lieut.-Colonel and Brevet Colonel E. H. Bethell, D.S.O., from h.p., to be a Chief Engineer, and is granted the substantive rank of Colonel in the Army.

AUSTRIA-HUNGARY.—*Training of Austrian Landwehr Officers.*—An Imperial decree of the 5th July last orders some important reforms in the Austrian Landwehr, of which the *Armeeblatt* gives the following details :

At the same time as the Landwehr field officer's course, meant to prepare captains of that branch of the Service for the duties of field officers, a parallel course will be temporarily held from the commencement of the military year 1905-06. The course for subaltern officers will be abolished from the termination of the military year 1904-05. Officers of the Landwehr will in future undergo courses at the Army Corps Schools for Officers.

In carrying out this decree the Minister for National Defence has laid down that the course hitherto existing will be known as Course No. 1, and the parallel one as Course No. 2. The course for subaltern officers will, as has been stated, be discontinued as soon as the one at present being carried out ends, the cadre-troop, the premises, and the *matériel* of that course being transferred to Course No. 2. Captains who have not yet followed the field officers' course, and lieutenants whose seniority dates back to the 1st May, 1897, inclusive, will still be nominated for the field officers' course, of which No. 2 replaces, provisionally, the former subaltern officers' course. Lieutenants who have been selected since the 1st November, 1897, must go through the Army Corps Field Officers' Schools of the Common Army. At the same time, lieutenants recognised as fit to pass for the rank of captain will only be nominated. They will have to have completed 3 years' service as officers with their regiments, and in addition to have spent at least 2 years in a unit (company or squadron). Those who have gone through a course at the War School or the subaltern officers' course will be dispensed from attending the course in the Army Corps School of Officers.

In the month of August each year the Minister for National Defence will fix the limits of seniority for officers who may be ordered to follow the Army Corps School course. In cases where in certain corps all lieutenants, within the seniority limits, who are ordered to it, cannot be spared for the Army Corps School course, Corps Commanders will themselves submit to headquarters the names of officers to be selected for it. Officers detached for sedentary corps duties, adjutants and officers of the recruiting district who may find themselves situated as mentioned above, must be relieved of their duties at the time specified. Momentary exemptions to follow the officers' Army Corps School course will not be accorded to officers who should follow it unless in case of absolute urgency. Lieutenants of the mounted or dismounted branches of the Service whose seniority in that rank dates from the 1st November, 1897, to the 1st May, 1899, will be selected for the Army Corps Schools in 1906.

Officers of the Austrian Landwehr who satisfy the conditions laid down by the decree for the organisation of the War School (JOURNAL for August, 1905) may, without taking into consideration if they have gone through a Landwehr subaltern officer's course, present themselves at the War School for passing the examination for admission.—*Revue du Cercle Militaire.*

New Musketry Instructions.—On the 1st October, that is to say, at the commencement of the recruit training, the new Musketry Instructions for infantry and jaeger battalions will come into force. The instructions, says the *Armeeblatt*, are issued with a view to the two years' period of service which will, no doubt, be adopted one of these days, and they satisfy the frequently expressed wishes of the military. The following, according to the above-mentioned journal, is a summary of its chief provisions :—

All theoretical details, the uselessness of which have been recognised, have been eliminated. The new regulations endeavour, above all, to give a training with a view to war, as rapidly as possible; with this object it considerably shortens the judging distance exercises, the carrying out of which takes up much time and writing, with but little practical value. The men are only divided into two classes of marksmen, the number of objectives is diminished by two, and the markers' duties have been simplified.

The new instructions have paid special attention to the avoidance of everything that makes musketry laborious, and to stimulate the interest of the marksman. It wishes by all possible means to excite a love of musketry amongst the soldiers, so that their stay in the musketry camps may be agreeable to them, and the musketry itself a distraction. Field-firing is left to the initiative of commanding officers, and will be always carried out on broken ground.

Firing under service conditions and the solution of practical musketry problems on the ground under conditions of war will be the object of special attention, and in the questions which will be put to commanders of troops, capital importance will be attached to the aptitude they show in taking up promptly a position in a given action.

Financial reasons hinder the satisfactory increase in the amount of practice ammunition. It remains fixed at 150 rounds a man, with 500 rounds per company, independent of the stock for the individual soldier. Major-General von Laube, Commandant of the Army School of Musketry at Bruck, on the Leitha, is the principal author of these instructions.—*Revue du Cercle Militaire.*

DENMARK.—*The Rexer Automatic Machine Gun.*—For a number of years we have been accustomed to consider that our modern rapid-fire and machine guns were capable of little improvement, and that the weapons of this branch of naval and military artillery would remain practically unchanged for some time. As regards the rapidity of fire, this belief appears to be correct, for there are certain physical reasons, such as the heating of the gun barrel, which tend to keep the rate of discharge within certain limits. But great advances have recently been made in the simplification of the mechanism and the reduction of weight of machine guns in a Danish invention, now known to the public as the Rexer automatic machine gun. It is claimed for this weapon that the fighting power of all branches of the Army service will be greatly increased by reason of its lightness and portability, combined with its comparatively high rate of fire, while at the same time the transport requirements will be reduced. The gun has been adopted by the Danish Government, and a number of others, including Japan, have reported favourably upon its performances.

The Rexer machine gun is really a shoulder arm, and resembles a large rifle of the ordinary type. Its weight is about 17½ lbs., and while this is considerable in comparison with that of the common rifle, it is a vast decrease from the 60 lbs. of other machine guns. The operation of the weapon is very simple. The gunner lies flat on the ground with the stock pressed against his right shoulder. Two light legs, forming a support, are attached near the muzzle end of the outer casing, and the special joints with which these are provided permit the weapon to be trained into any position and to be elevated or depressed within generous limits. When not in use the supports are folded back against the barrel. The cartridges, contained in curved clips or magazines in batches of twenty-five, are fed into the top of the breech-casing by the left hand of the gunner. A single pull of the trigger and the twenty-five cartridges in one clip are discharged in less than two seconds. A rate of 300 shots a minute can be maintained with little trouble, and as the supporting legs and a perforated casing surrounding the barrel proper obviate any handling of the same, the gunner is not troubled with the heating of the weapon. The position of the operator—flat on the ground—affords the greatest protection with minimum "cover"; and this, together with the inability of an enemy to distinguish the Rexer gun, even at short distances, from an ordinary rifle, gives this type of weapon a preponderating advantage over many other kinds of rapid-fire gun.

Fundamentally, the Rexer gun depends upon the same basic device as nearly all other weapons of this type, as the power for working the mechanism is obtained from the recoil. The weapon comprises essentially the stock, the casing, and the trigger plate, which enclose the breech mechanism, the rifled barrel, and a perforated barrel casing or outer tube. The recoil drives the barrel with the breech and other moving parts some two inches backward within this outer tube, thus compressing a strong recoil spring which is enclosed within the front part of the stock. This, after the force of the recoil is spent, expands and drives the barrel forward again into the firing position, the recoil and return of the breech operating a mechanism within the casing which ejects the empty cartridge case, inserts a new cartridge into the chamber, closes the breech, and fires the shot.

Among other advantages claimed for the Rexer machine gun is its convertibility by a simple process into a single-shot rifle by which it becomes available for deliberate shot-by-shot fire like an ordinary rifle or

carbine. For the reasons given above, it is less liable to be put out of action than any other machine gun, for its inconspicuous appearance will not attract undue or embarrassing attention from the enemy. By reason of its lightness and portability, it is easily carried on the march by cavalry or infantry.—*Scientific American.*

FRANCE.—*Recruiting Statistics for 1904.*—The number of young men of the 1903 Class inscribed on the lists in January, 1904, amounted to 321,243, a decrease of 3,010 on the number of those inscribed of the preceding class. By adding to these those put back from 1902 (62,155) and from 1901 (24,641), the total recruiting resources amounted to 408,039 young men who were distributed as follows :—

Exempt as unfit for service, dead, etc.	28,745
Not permitted to serve (convicts, etc.)	72
Put back	84,233
Residing abroad (out of Europe)	714
Naturalised and exempt, on account of age, from service in the Regular Army	1,166
Enrolled in the non-combatant branches	29,711
Serving as Volunteers in the Army (*a*)	27,457
Serving as Volunteers in the Navy	4,736
Enrolled for 1, 2, or 3 years (*b*)	231,205
Total	408,039

2,140 men of the contingent, enrolled for 1, 2, or 3 years, were drafted into the Colonial Troops. The Home Army contingent was thus reduced to 229,065 men. During the year the number of young men who enlisted before reaching the service age amounted to 20,155 in the Home Army, and 2,285 in the Colonial Troops. By adding to these numbers those mentioned above under the figures *a* and *b*, the total number obtained for the 1904 contingent will be found to amount to 281,502 men, 277,077 of whom were posted to the Home Army. In these numbers are included 10,500 who failed to appear, but who were posted as though present. The 231,205 men, who were called to the colours, and the 22,440 who enlisted before the service age were distributed in the following proportions amongst the various branches of the Service :—

Home Army.	Called out for 1 year.	Called out for 2 and 3 years.	Engaged for 2 and 5 years.
Infantry	55,037	108,850	12,679
Cavalry	158	21,850	3,066
Artillery	8,405	21,420	3,770
Engineers	1,518	4,180	640
Transport	1,012	2,205	—
Administrative troops, etc. ...	1,210	3,220	—
Total	67,340	161,725	20,155
Colonial Troops.			
Infantry...	—	1,630	1,759
Artillery	—	510	526
Total	—	2,140	2,285

The contingent called to the colours in the Home Army shows an increase of 29,116 men on the 1902 Class, viz.:—229,065 as against 199,949. As a matter of face, the increase is only 21,000 for a little more than 8,000 men were sent back to their homes after a medical inspection to which recruits are subjected on arrival at their Corps. As regards education, the 321,243 men on the recruiting lists were distributed as follows:—

11,749 could neither read nor write.
3,280 could only read.
29,021 could read and write.
253,654 had a higher primary education.
4,935 had obtained certificates of primary instruction.
6,286 had bachelor's diplomas.
12,318 of whom no educational statistics are available.

The calling to the colours of the 1903 Class took place on the 14th, 15th, and 16th September, 1904.—*Bulletin de la Presse et de la Bibliographie Militaires.*

GERMANY.—*Machine Gun Musketry Regulations.*—The practice and teaching of firing with machine guns cannot be suitably provided for by the application of infantry musketry regulations. Machine guns require special regulations, which have just been issued for them in Germany, and of which the following is an analysis:—

The instruction consists of preparatory exercises, instructional firing, and firing under service conditions. Machine gun detachments are liberally provided with ammunition as follows:—

1. For firing under service conditions—60,000 rounds.
2. For experimental firing—6,000 rounds.
3. For carbine practice—75 rounds per man.
4. For officers' carbine practice—500 rounds.
5. For non-commissioned officer's machine gun competitions—250 rounds per non-commissioned officer.
6. For proving and adjusting machine guns and carbines—1,000 rounds.
7. For instructional firing—1,000 rounds.

This makes a total of 70,000 ball cartridges; 100,000 blank cartridges are also provided annually; 30,000 for instructional purposes; and 70,000 for manœuvres, etc.

Preparatory Exercises.—At the commencement the instructor shows, without entering into details, the working of the gun in firing, and the aiming apparatus, and teaches how to aim. Then comes the handling of the weapon, the loading and firing movements, aiming first from behind the carriage, then lying down, from the knee, or seated. The firing with ball ammunition is not attempted until the aiming and laying of the gun are perfect. Very special importance is attached to the rapidity and regularity of aiming.

Kinds of Fire.—The most simple method of firing is that by single shots, which is only used for instructional purposes. The other methods are:—1st, successive firing of a series of 25 shots, after which the fire ceases to observe the results, and if necessary, alter the sight and the point aimed at. It is used either for purposes of adjustment, or against difficult objects in broken ground, and at long ranges; 2nd, continuous fire, which is resorted to when it is wished to obtain great results. This

fire is only interrupted when the desired result has been obtained, or if the objective must be changed, when the gun has jammed, etc. As regards the cone of spread the regulation distinguishes between aimed (*Punkt*) and traversing (*Streufeuer*) fire. In the former the same point is always aimed at, whilst in the latter the gun is directed from one side to another, or up and down, so as generally to sprinkle the objective, or an extended surface. The rapidity with which the gun is moved depends on the distance and the nature of the fire which, as a rule, is deliberate. This species of fire is much used.

Instructional Firing. — These practices are intended for all the *personnel*, including officers and non-commissioned officers, great accuracy in firing, and a knowledge of the use of all sorts of fire in all situations. They are, however, merely preparatory and are followed by instruction in firing under service conditions. Great importance is attached to the accurate judging of distance, and to their measurement by the "Halm" telemeter. Prizes and badges are awarded for these practices similar to those given to the infantry.

Firing under Service Conditions.—These practices form the crown and object of the instructions of which they are an essential part. They afford opportunities to the entire *personnel* to perfect their marksmanship, and to make use of it under conditions as similar as possible to those of war. Special attention is directed to the instruction of the cadres, officers, and non-commissioned officers, for on account of the short period of service the private soldiers can only receive a cursory training however great pains may be taken with it, and liberally as they may be supplied with cartridges. The cadres, therefore, play a most important part in the machine gun detachments. Distinction is drawn between the firing under service conditions of single machine guns of machine gun sections, and of detachments. About 25,000 cartridges are expended on the first; 17,000 on the second; and the remainder on the detachment practices.

The object of practices with single guns is specially for the instruction of gunners and sergeants in charge of the guns; that of collective firing for that of the cadres. Care is taken to simulate losses amongst the *personnel*. They are carried out according to tactical hypotheses, and most frequently at long ranges and on objects suitable for the fire of machine guns.

Instructional firing (*Belehrungschiessen*) is also carried out, and is meant to practically demonstrate the effects of the machine gun to the *personnel*. They include night firing, in which the weapons are laid by day on an appropriate objective, but where the practice is only carried out once after night has fallen. Finally, the regulations lay down the conditions of experimental and adjustment practices for machine guns, which must be carried out every year.—*La France Militaire.*

Changes in the Infantry Manœuvre Regulations.—The Prussian War Department has introduced some changes into the Infantry Manœuvre Regulations in the chapter on "The Combat," of which the principal ones are the following:—

The command "Rise" should not in future be given to men lying down before the assault, so as to avoid drawing the attention of the enemy and to give him no opportunity of making them the objective of his fire.

Dense chains of skirmishers must not be deployed at long ranges from the enemy, because it merely exposes the troops to useless losses, when at that period less dense chains could develop a sufficient fire. At long ranges lines of skirmishers should advance, in accordance with the power of the hostile fire, by fractions, more or less large, of the line, and whose rushes might extend to 100 paces.

Should the enemy's fire be very hot, small fractions will rush forward for 30 or 40 paces, or the movement may be carried out by rushes of single men, one after the other.

Men should stoop or even creep, according to circumstances.

Rushes should not be carried out at regular intervals.

There is no necessity for section commanders to be in advance of their sections on all occasions.

As far as possible the reinforcement of the skirmishing lines should be conducted without the possibility of observation by the enemy; it should always partake of the character of a surprise.

It is not essential to advance and lie down at 300 or 400 paces from the enemy to carry out a substantial fire.

The line of skirmishers should move forward, at the same time keeping up its fire, and hurl itself, with the bayonet, on the enemy, with the assistance of its reserves.

When under hostile infantry and artillery fire, the reserves will take up those formations which best ensure them against losses. They may form up in thin lines or open files, in which formations they should manœuvre or advance in swarms.

All lines will throw up entrenchments.

Every unit in the first line, including the company, should be acquainted with the objective, that is to say, the point on which it must direct its efforts.—*Metzer Zeitung.*

Zebras as Mounts. — The first attempts to tame zebras so as to gradually use them for military purposes, either as mounts or draught animals, are of comparatively recent date. They are in part due to the initiative of Graf von Gätzen, when Governor of German East Africa in 1903. The reasons for the long neglect to attach sufficient importance to the taming of these animals, of which there are about 50,000 in that German colony, are of various kinds, the chief one being, undoubtedly, that on account of their great wildness, it was not considered possible to put them to any practical use, and any attempts to train them was regarded as so much useless trouble. It is but slowly that people have been convinced to the contrary, after a way had been found and a rational method discovered by which satisfactory results could be achieved. This method may, in general lines, be characterised as follows :—

A commencement is made by assembling the zebras in herds of about 200 on large prairies; from these herds the quietest animals are then selected and placed in roomy stables, separated from one another, and put next to donkeys in order to acquire their docility. After some time, when the zebras have become quiet, attempts are made to harness them and accustom them to stable management; they are then taken out coupled with donkeys and made to walk. For a long time it was impossible to pass this point and to completely harness or saddle the zebras, as these animals savaged their masters and prevented their approach by kicking. It was at last discovered that zebras have a weak point, and that is, held by the ears they soon cease to resist.

Thus little by little, progress was made, and when it was found out, in addition, that calmness and good treatment did not always suffice, but that, on the other hand, the whip gave good results in training, the first experiments with zebras as mounts and as draught animals were fairly successful, and crowned long and patient work with success. It remains to be seen if zebras can be depended upon from a military point of view, especially as regards endurance. Repeated experiments in patrol and reconnaissance duty gave good results, and demonstrated that zebras may be ridden for several days, covering 500 kilometres, and are at the end still fresh, active, and in good condition. It would therefore seem that the employment of these animals will be most useful in African colonies, and that the zebra may be reduced to a condition of docility formerly deemed impossible.—*Internationale Revue über die gesamten Armeen und Flotten.*

A Transportable Search-Light. — The multiple uses of projectors have resulted in the most varying designs of such apparatus, each of which is intended to meet some special requirement. The important

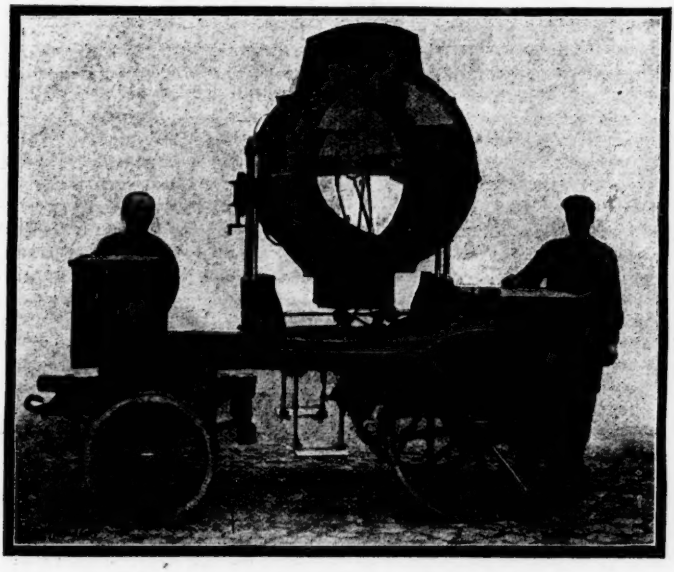

FIG. 1.—PARABOLIC REFLECTOR.

rôle incumbent on them, especially in modern warfare, has been evidenced by the Russo-Japanese War, as it is being conducted on land and on sea. Overland projectors have, it is safe to state, been used to any large extent for the first time at this juncture, while on board all large modern war-ships, projectors have for years past been indispensable.

On account of the increasing importance assumed by projectors in connection with land warfare, one type designed by the Siemens-Schuckert

Werke, of Berlin, and which has been used in actual practice, will be described in the following :—

The projector represented in Fig. 2 is fitted with a mirror accurately ground to parabolic shape. The mirror is 35·433 inches in diameter, and has a focus of 14·96 inches. In the focus is located the crater of the positive carbon, which, during operation, gives off its light against the mirror, from which it is reflected and emitted in practically parallel rays. To protect the mirror and lamp and to avoid any lateral escape of light rays, the mirror is surrounded by a housing fitted with the proper openings for ventilation, through which the hot combustion gases of the carbon are carried off. There is also a door in the housing for observing the arc, and the front of the same is closed by several strips of glass as clear as it is possible to obtain.

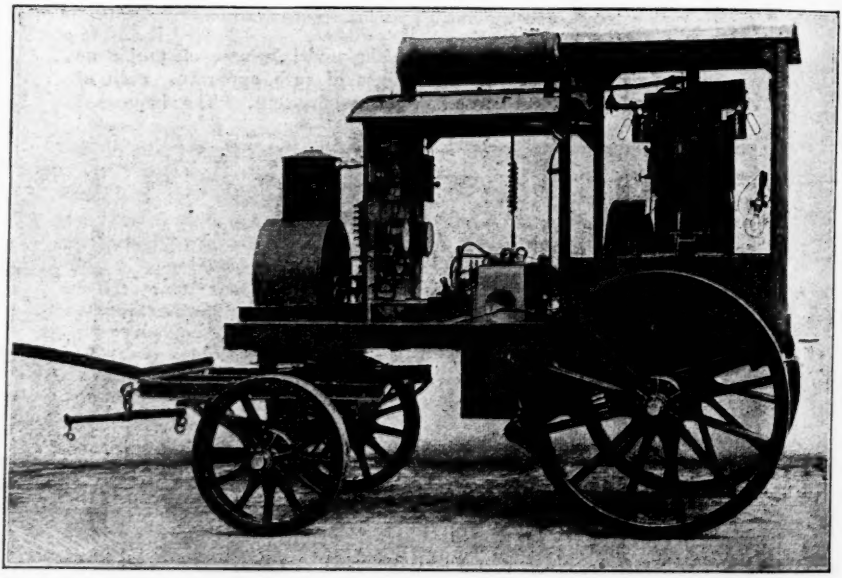

FIG. 2.—SEARCH-LIGHT FOR MILITARY USE.

The projector has been made transportable, and is mounted on a four-wheel cart, carrying at the same time in front a box with any necessary tools and polishing material, and on the back, likewise in a box, a cable drum containing about 150 to 200 metres of double cable to connect the projector to existing mains or else to a transportable current-generating plant.

Conditions will very rarely be so favourable as to allow of the projector covering the ground freely. In most cases it has to be raised to enable the light beams to overcome at least such obstacles as are interposed in the immediate neighbourhood. The housing has on this account been made movable, and can be lifted about one metre. During transport the housing is lowered, so as to place the centre of gravity of the whole cart as low as possible, and to damp as far as possible the

influence of any oscillations on the projector. By this favourable position of the centre of gravity, the vehicle is enabled readily to deal with the worst routes and even to accompany riding artillery.

The projector can be designed with electro-motive distance drive, providing both for the horizontal and vertical motions of the housing. Each of these movements is effected by a small electric motor operated by the observer at a distance of 100 to 200 metres from the projector by means of a button switch, and for this purpose a special connecting conductor is obviously required. The great advantage of this arrangement is that the observer, on the projector being installed laterally, is enabled far better to recognise the illuminated field than if he were compelled to look nearly throughout the length of the light beam close to the projector. From his lateral post he will be able to distinguish the shadow of any object as produced by the beam, so that the object comes out distinctly.

The intensity of the beam of light given off by the projector is about 61,000,000 normal candles with 90 to 100 amperes. By its aid an efficient telescope will enable men engaged in field work or else striking projectiles to be recognised at a distance of a mile and a half. Larger objects, such as buildings or the like, can be recognised up to about 4½ miles, in case they stand out against a suitable background.—*Scientific American.*

Russia.—*The Infantry Combat.* — The *Ruskii Invalid* comments as follows on the recent changes made in the Instructions for infantry under fire (Journal for July, 1905, p. 860):—

The present war has shown, as has never been done before, the extraordinary power of artillery and infantry fire, to which must also be added that of machine guns. The long range, the rapidity and precision of fire of the rifle and the machine gun have made the conduct of offensive action extremely difficult. *The experiences of the war have shown that the modern combat demands from officers, even of the lowest rank, and from every private soldier, a reasoned vigilance during its action, prudence and reflection on every step to be made, and at the same time an absolute and unshaken resolve to come to grips with the enemy.* In spite of the many voices which have been raised, especially in Germany, to proclaim the superiority of fire over the bayonet, the Russo-Japanese War has proved the importance in action of the *arme blanche* as the final and decisive act. That is why, whilst awaiting the revision of the regulations, which cannot be made till the conclusion of the war, the military authorities have already slightly modified the principles which govern the training of infantry with a view to battle. It may be as well to say a few words on the essence of these principles, and on the causes of their being formulated.

The rapidity of fire and of loading the long range and precision of the present rifle, permit of fire being opened very rapidly, and of, in a short time, overwhelming the enemy with a mass of lead. Consequently the assailants' first object should be to refrain from offering clearly visible and easily spotted targets to the defenders for any length of time. It is for that reason that the attack, even at long ranges, must be carried out by rushes. As the action of the rifle increases with the shortening of the distance, and as, at the same time, it becomes more and more easy to aim at the objective, it naturally follows that the nearer he approaches, the assailant should shorten the time during which he exposes himself to the defender; it other words, the rushes

become shorter and shorter, and the fractions carrying them out less and less dense. Whilst during a sustained fire the chain of skirmishers may advance by rushes of 100 paces, in larger units, under a hot fire, the rushes are made by sections, or even less by squads, by groups of skirmishers showing themselves occasionally behind a general shelter. Rushes will be short, so as not to present large objectives to the enemy's fire. It is recommended that they should be made at top speed and stooping towards the ground. Useless losses, above all, will be averted by the manner in which these rushes are carried out. The apparition of a fraction executing a rush should, as far as possible, be unexpected by the enemy. By rising rapidly from the ground and running to the next shelter makes it more difficult for the enemy to pour a hot fire on the fraction making the rush. There should, consequently, be no regularity in the selection of fractions for rushing; they should appear most unexpectedly. A short rush of 30 to 40 paces does not permit of a hot fire being directed even on a favourable object. It is in order to increase the unexpectedness of the rush and the rapidity of disappearing that the command "Rise" has been abolished. The more rapidly the men rise from the ground and the quicker the commands follow without interruption, the less will be the losses.

Great importance should be attached to the notification that the section commander need not run to the front to take command, and that he can direct his men by orders. This method of action is absolutely indispensable in carrying out the rushes and the creeping movement—a proceeding which both sides adopted with success in the theatre of war. Although slow, this process of advance allows a line of skirmishers to advance to the closest ranges in broken country, as was usually the case in Manchuria. On the other hand, it is evident that this method is not possible unless the skirmisher has been individually trained to it.

Experience has shown that it is absolutely impossible to deliver the assault on a hostile position in the formation laid down in the regulations, viz.: by a general advance without firing for 300 or 400 paces, on account of the destructive violence of the rifle and machine-gun fire the Japanese were able to bring to bear on the chain itself. In the actual combat it is therefore necessary that the advance should be supported by fire up to the moment of the bayonet shock. The chain continues to advance firing up to point-blank range, and it is only under cover of this fire that it is possible for the reserves at the distance for the bayonet shock, and, rejoining the chain, hurl itself upon the enemy.

The power of fire of the present day—rifle, machine gun, and gun—compels some slight modification in the movements of even the most distant reserves, and it is most important to recognise the permission given to reserves to move in single rank with open intervals. A series of chains is thus obtained moving one behind the other, sometimes at a walk, sometimes by rushes, in groups more or less strong, or by single individuals, sometimes creeping, gradually melting into the chain of skirmishers, feeding it and bringing to it a constantly increasing number of rifles. The offensive is thus developed very slowly, and the more so the closer the position is approached. The experience of the war has demonstrated that *the pushing forward of a fighting formation into the effective zone of musketry fire, viz., from 1,400 paces, lasts for several hours, and sometimes entire days.* Although it is impossible to thoroughly represent this method of action in peace manœuvres, it is necessary to practise the troops to it, even if only to a limited extent.

The changes in the method for reinforcing the line of skirmishers should also be noted. It is evident that the only possible method consists in bringing up the reinforcements in a scattered formation, the essential idea being to diminish the losses as much as possible. It is consequently of the utmost importance to refrain from reinforcing the skirmishing line under the eyes of the enemy.

In conclusion, great stress must be laid on the importance of the throwing up of trenches by all fractions of the first line, and consequently the only method of those under fire doing so is to construct them whilst lying down without rising from the ground. This can be readily done if every second man works whilst his comrade keeps up a hot fire. It is insisted upon already, apparently, that all units of the first line, including the company, must know their point of attack. Nowadays the necessity for this is more important than ever in consequence of the special conditions of offensive action, where the first line is split up into a number of units acting independently, where a great deal depends on the individual skirmisher, and in consequence, too, of the heavy losses in officers and non-commissioned officers. Such is the essence of the changes in the method of conducting the infantry combat. As may be seen, the bayonet shock remains, as before, the chief object of the assailant, but whilst taking into account the serious results of the present power of the fire.—*La France Militaire.*

Combined Action of Infantry and Artillery in the late War.—Many assertions have been made on the want of combined action between the Russian infantry and artillery in the late war. The following letter on the subject, by Lieut.-Colonel Fedorov has recently appeared in the *Ruskii Invalid* :—

"It is not unusual to hear infantry officers, and even those of higher rank, assert that in this campaign the artillery have sometimes paid but small attention to their requests and entreaties. I have even been told of cases when the artillery was requested to direct its fire in such and such a point of the enemy's position, on such and such an objective, clearly visible to the infantry observers and judged important by them, the artillery has refused under various pretexts such as that the object was not in their sector, that it was not possible to fire on it; that firing by night was inefficacious and useless, etc. One cannot avoid asserting that in certain rare instances there was an absence of any close connection between the artillery and the defenders of the advanced lines. Artillerists cannot themselves determine if these accusations are well founded, but they have certainly a small substratum of truth. Even if they only contain one hundredth part of the truth their source must be discovered, and the means sought for of paralysing this want of connection, in cases when it occurred. After the first actions in the campaign, the importance of masked artillery positions became so evident that exclusive use was made of the goniometre introduced into the field artillery; batteries selected positions which were not only masked from the enemy, but also protected from shells and shrapnel fire. The positions occupied by our troops were places completely devoid of all vegetation, and without any cover, this was one of our misfortunes. Under these conditions our infantry was obliged to advance up to the very crest line from which the ground sloped away so as to obtain a better and more extended field of fire. In order to mask themselves the artillery should make use of folds of the ground. Masked positions for the emplacement of guns and for the movements of the timber were

very exceptionally found, very rarely indeed near the advanced infantry trenches, and the works of the principal line of defence. Ordinarily gun-pits were dug at about from 1,000 to 1,500 yards from the latter. The firmly established opinion that the artillery position should be hidden from the enemy, may lead to the belief that a position begins to become dangerous if the enemy by climbing a tree 5 miles off can see it, and that it is even imprudent to open fire for fear that he may guess, from the direction of the fire, where the guns are placed.

"By placing artillery far in rear of the advanced crest line, battery commanders are forced to select observation points at a great distance from the batteries, sometimes 1,500 yards from them. Who should be at these points? Battery commanders, observing officers or men from the batteries? Every one of these solutions have their disadvantages. The battery commander should be able to see all the ground in front of his battery, and personally follow with his eyes the progress of the action, remembering that his responsibility frequently compels him to take decisive action himself. But if he withdraws himself from the battery, any rupture of the telephone wire or any stoppage of the telephone may make it impossible for an artillery unit to intervene in the action. I have seen such things with my own eyes. And should anything happen in the battery, would not its commander be anxious?

"Some means must be found of letting the guns draw near to the advanced lines of the infantry. Close connection must be established with the main body of the forces entrusted with the defence or the attack. What may be impossible for 8 may be easily done by sending forward 6, 4, or 2 of these guns. If we content ourselves with 6 guns per battery, and if, not fearing to break up a battery into sections, the guns can more readily be sent forward, we shall be able to enter on a closer connection with the infantry. We must understand that what infantry bears we must also put up with, and we shall no longer be reproached with having refused assistance, or if so, it will be an altogether exceptional case."—*La France Militaire.*

Machine Guns.—The *Ruskii Invalid* publishes the observations of the commander of a machine gun detachment who has been for nine months at the theatre of war.

This officer is of opinion that it is especially the cavalry that needs machine guns attached to it in order to supplement the weakness of its fire. The association of machine guns would give that arm great power in the execution of raids and other operations. It would almost entirely dispense with the necessity for dismounted action on the part of the cavalry, and leave to its natural *rôle* of reconnaissance and mounted action with the *arme blanche*, and would, at the same time, affect the question of mounted infantry, for whose existence there would then be no reason. A cavalry detachment possessing its own mounted machine gun detachment and horse artillery batteries would enjoy the greatest independence. Advanced and rear guard actions would quite naturally become the province of cavalry provided with machine guns without the latter running risks of being cut off. The best proof of the necessity for providing cavalry with machine guns is that several regiments purchased them at their own cost.

In order, however, to be really useful to cavalry it is essential that all machine gun detachments should be able to move at a rapid pace There is no necessity for having both unmounted and mounted detachments, and it is of importance that even the pack detachments should

be able to trot. Men and horses should be trained to endure the trot for long distances, and to have great mobility. They should, in addition, be but little visible on the battle-field; under these conditions alone can they take part in an offensive movement. The heavy shields, which are too visible, should therefore be given up, the gun carriage only used on the march, and once in action the tripod should be the only support used. Cartridges should be brought in boxes carried or hanging from the arm.

Mounted machine gun detachments may in the field be attached to infantry, cavalry, or artillery, as necessary; but in peace time they should form distinct, if not independent, units, having their own commanders and their own special inspectors, if it is wished that they should make real progress. Commanders of machine gun detachments should be energetic, well trained officers, and must always be well posted in the mission devolving on the detachment to which they are attached, if it is desired that they should take the necessary initiative with a view to operating on the flanks or on the rear of the enemy, destroy by machine gun fire the men of the hostile artillery, etc. An undecided commander of a machine gun detachment reduces to nothing the value of these powerful weapons.

As a machine gun detachment requires from 1½ to 2 minutes to prepare for opening fire, it is essential that it should be provided with scouts who could replace the buglers, who are of no use. Machine gun detachments only drawn by 2 horses can only move at a walk; trotting with the men seated on the boxes can only be carried out on flat and firm ground.

The Russian officer formally declares that one must never dream of employing machine guns by isolated guns, as jams too often occur and put them temporarily out of action. The Russian regulations on machine guns very properly forbid the employment of solitary guns, and lay down that at least two must be employed together, so as to ensure continuity of fire in case of damage to one of them. (The German regulations and the French provisional instructions lay down the same rule.)—*La France Militaire.*

Hydrogen Balloons.—At the recent Aerostatic Congress, which was held at St. Petersburg, Dr. Helbig described the new hydrogen generators which the Russian Army is using for field work in connection with war balloons. The new apparatus has now been adopted by the Aerostatic Corps of the Army. The process is designed to reduce the weight of the apparatus as much as possible, so as to make it easier to transport. Up to the present hydrogen has been prepared for balloons by acting on iron with dilute sulphuric acid; but there is another reaction which is available, that of alkaline hydrates upon aluminium, in which hydrogen gas is given off.[1] Two different types of apparatus have been designed for the Army, one for field work, mounted on a carriage, and a second for mountain use. These apparatus are built of iron, as the alkaline solutions have no effect upon that metal. A gas generator and a scrubber form the two different parts. The generator contains a caustic soda solution, in which is placed an iron basket containing aluminium scrap. At the upper part, the generator is connected with the scrubber by a long sheet-iron tube. The gas bubbles through the water contained in the scrubber, leaving the traces of alkaline matter which are brought over. From thence the hydrogen is brought to the

[1] This reaction is represented by the formula :—

$$Al + 3\,NaO,\,HO = 3\,H + Al\,O_3,\,Na$$

point where it is to be used by a flexible tube made of canvas treated with impermeable varnish. If need be, several generators of the above type can be coupled together. The different joints of the apparatus are made by hydraulic pressure, and are very tight. When once commenced, the aluminium is attacked by the soda solution with great energy. The gas comes off very rapidly, and the liquid heats up to the boiling point. But as the proportion of free soda in the solution diminishes, the reaction becomes slower. In order to finish the gas production with a sufficient activity, the generator needs a supply of caustic soda which is above the theoretical value. If the above formula is taken as the starting point, we find that to obtain 1 cubic metre (1·26 cubic yards) of hydrogen we need 1·8 lbs. of aluminium and 7·9 lbs. of caustic soda; but as the commercial metal is generally only 99 per cent. pure and the commercial soda only has 77 per cent. at most of sodium hydrate, we need to use 10·3 lbs. of the latter. The weight of raw materials which must be transported in order to furnish 1 cubic metre hydrogen is therefore 12 lbs. With the usual process, using iron and sulphuric acid, the weight to be carried is 15·5 lbs. The new method thus gives an economy of 20 per cent. as regards weight. There is also a reduction in the weight of the apparatus, which can be made much lighter, seeing that they are not built of sheet iron covered with lead, as in the other cases. The hydrogen which is obtained by the new process is of much greater purity. It does not contain any volatile hydrocarbons, which increase its density and diminish the lifting force, nor any hydrogen arsenide, which is often met with, and renders the gas dangerous on account of its poisonous properties. The only impurities it contains are water vapour and traces of alkaline liquid. A great advantage is the use of soda, which is solid, as compared with the corrosive sulphuric acid, when we consider the question of transport. The only disadvantage which the new process shows is the cost of the hydrogen, which Dr. Helbig figures as high as 0·02 dollar per cubic foot. Until the price of aluminium drops considerably, it is doubtful whether the process can be used except in cases where the cost is a secondary matter.—*Scientific American.*

UNITED STATES.—*Army Statistics for 1904.*—According to the official report, the Regular Army of the United States was composed as follows on the 30th June, 1904 :—

——	Officers.	Rank and File.	Total.
Staff and various departments	735	5,000	5,735
30 Infantry Regiments ...	1,462	23,296	24,758
15 Cavalry „ ...	752	11,635	12,387
1 Artillery Corps	642	16,147	16,789
1 Engineer „	159	1,065	1,224
Recruits, Native scouts, etc....	—	3,371	3,371
Total of Regular Army ...	3,750	60,514	64,264
Native Troops in the Pacific	121	5,432	5,553
Grand Total	3,871	65,946	69,817

In 1903 the Army effective was 3,828 officers and 65,209 rank and file, total 69,037; thus in 1904 there was an increase of 780 men. The number of young men enrolled during the same year (1904) amounted to 21,008 (not including recruits for native troops and the hospital

service), and that of re-engaged men 6,372, or a total increase of 27,380 men.

Of the 28,981 men who left the Army during the same period—
16,896 were discharged on expiration of period of service.
5,474 were dismissed for various reasons.
188 retired.
5,889 deserted.

In 1904 the organised Militia or National Guard consisted of 8,479 officers and 106,787 rank and file, or altogether, 115,266 men.

NAVAL AND MILITARY CALENDAR.

SEPTEMBER, 1905.

1st (F.) The new Anglo-Japanese Agreement was announced.
4th (M.) H.M.S. "Doris" paid off at Devonport from Atlantic Fleet.
" " The Peace Treaty between Japan and Russia was signed at Portsmouth, United States.
5th (T.) H.M.S. "Roxburgh" commissioned at Chatham for First Cruiser Squadron.
7th (Th.) H.M.S. "Æolus" paid off at Devonport.
10th (S.) Launch of first-class battle-ship "Napoli" from Castellamare for Italian Navy.
11th (M.) Japanese first-class battle-ship "Mikasa" destroyed by fire and sunk in Sasebo Harbour.
14th (Th.) H.M.S. "Glory" arrived at Plymouth from China.
" " H.M.S. "Illustrious" paid off at Chatham from Atlantic Fleet.
15th (F.) H.M.S. "Arrogant" left Plymouth to join the Atlantic Fleet.
16th (Sat.) H.M.S. "Pyramus" commissioned at Devonport for training-ship in Australia.
18th (M.) H.M.S. "Pyramus" and "Pioneer" left Plymouth for Australia.
" " H.M. the King held a Review of about 39,000 Volunteers at Edinburgh.
20th (W.) Reported that a large German convoy was captured by the natives in German South-West Africa.
21st (Th.) Announced that the Indian Army Manœuvres had been abandoned owing to drought.
23rd (Sat.) H.M.S. "Dominion" left Portsmouth to join Atlantic Fleet.
" " Launch of third-class cruiser "Danzig" (Ersatz "Alexandrine") from Imperial Dockyard at Danzig for German Navy.
25th (M.) The terms of the Karlstad Agreement between Sweden and Norway were published.
26th (T.) The Text of the new Treaty between England and Japan was published.
27th (W.) The Thames Valley Army Manœuvres were concluded.
29th (F.) Launch of first-class battle-ship "Hanover" from Imperial Dockyard at Wilhelmshaven for German Navy.
30th (Sat.) Launch of first-class armoured cruiser "Natal" from Messrs. Vickers Works at Barrow-in-Furness.

Addenda to August Calendar.

August 31st (Th.) Launch of first-class battle-ship "Vermont" at Quincy, Mass., U.S.A. for U.S. Navy.
" " Launch of first-class armoured cruiser "Jules Michelet" at Lorient for French Navy.

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NAVAL.

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AUSTRIA-HUNGARY. — *Mittheilungen aus dem Gebiete des Seewesens.* No. 10. Pola: October, 1905.—"The Hygienic Problem of the Ventilation of Closed Compartments in Ships." "Mishaps to Marine Engines." "The German Turbine Torpedo-Boat 'S 125.'" "The Care of the Wounded during Naval Battles." "A Contribution to the Solution of the Pending Questions as to the Present and the Future of our Mercantile Marine." "A New Book on Christopher Columbus." "Methods for the Hanging of Rudders in War-Ships." "Foreign Naval Notes."

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Le Yacht. Paris: 2nd September, 1905.—"Some Details of the Battle of Tsu-shima." "Yachting Notes." "Jurisprudence." "The German Battle-Ship 'Kaiser Barbarossa.'" "The Effect of the Law of

1902 on the Mercantile Marine." 9th September.—"The Changes in the *Inscription Maritime*." "Yachting Notes." "The Protection of the Mercantile Marine." "Some Details of the Battle of Tsu-shima" (*continued*). "The Dock-Yard Workmen." 16th September.—"The Lessons of the Russo-Japanese War." "Yachting Notes." "The Protection of the Mercantile Marine" (*continued*). "The Spanish Ex-Monitor 'Puigcerda.'" "Some Details of the Battle of Tsu-shima" (*concluded*). 23rd September.—"The Lessons of the Russo-Japanese War" (*concluded*). "Yachting Notes." "The Protection of the Mercantile Marine" (*continued*). "Some Questions Concerning Uniform." 30th September.—"The Naval Budget for 1905." "Yachting Notes." "The Protection of the Mercantile Marine" (*continued*).

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July, August, and September, 1905.—Have not been received.

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UNITED STATES.—*The Journal of the Military Service Institution.* Governor's Island, N.Y.H.: September-October, 1905.—"Observations on Military Service in Europe." "Operation and Maintenance of a Railroad in War." "Infantry Drill: Some of Its Essentials." "Why General Bonaparte was Selected to Command the Army of Italy." "Remarks on Manœuvres, Mainly for Company Officers of Infantry." "Organisation,

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NOTICES OF BOOKS.

The Naval Annual, 1905. Edited by The Hon. T. A. Brassey, A.I.N.A. Portsmouth: Griffin & Co. 15s.

The current edition of this well-known Annual is an exceptionally interesting one, containing some articles of more than ordinary value; of these the two which will probably most interest naval readers are the review by Admiral Sir Cyprian Bridge of the course of the Russo-Japanese Naval Campaign of 1904; and a thoughtful contribution by Vice-Admiral Sir Reginald Custance, entitled, "A Plea for the Study of Tactics."

As usual, the Annual is divided into four parts. Part I. is made up of articles by different authors; Part II. contains the tables and plans of British and foreign ships; Part III. is devoted to armour and ordnance; and Part IV. to the Estimates of the great Powers, and Miscellaneous matter. Chapter I., on the "British Navy," is by the Editor, and Mr. Brassey apparently agrees with the writer of the *Blackwood* article: "A Retrograde Admiralty"—which recently made such a stir—that the new Committee on "Designs" clearly diminishes the responsibility of the Board, the Controller, and the Chief Constructor for the designs of war-ships, while the one on Dockyard Administration still further undermines the position of the Controller, and diminishes both his responsibility and that of his assistant, the Director of Dockyards, for the efficient working of this department. In Mr. Brassey's opinion the establishment of both these Committees appears to be opposed to the sound principles of administration which have hitherto prevailed at the Admiralty. He also agrees with the *Blackwood* writer and many other competent critics, that the recent elimination of cruisers has been too drastic, as "for scouting duties and the protection of commerce, numbers are above all things necessary, and in war it has always been found that there is a use for cruisers of all sizes. We are selling or striking off the effective list several cruisers quite capable of fighting the numerous third-class cruisers of France or Germany, and our cruiser strength, from the point of view of numbers, will be very seriously diminished." Chapter II. deals with foreign Navies, and calls for no special comment. Chapter III., also by the Editor, on "Comparative Strength," is slightly contentious in tone, but also contains useful matter for reference, although we do not agree with Mr. Brassey's method of classification of cruisers, in

which he lumps armoured cruisers with merely protected ones; to put cruisers like the "Minotaur" and "Shannon" in the same category with the weak unarmoured "Diadem" class seems to us absurd. Chapter IV. is an interesting little paper on "The Navy and the Somaliland Expedition, 1902-4."

Chapter V., by Vice-Admiral Sir R. Custance, "A Plea for the Study of Tactics," comes at an opportune time, and is well worth study. The author concludes his sketch by the statement that "it has been written with the object of showing that tactical principles are dependent upon the weapons in use, and not on the motive power; that changes in tactics are due to changes in weapons, which can be largely determined by careful experiments in time of peace; that history has as many lessons to teach in tactics as it is admitted to have in strategy; that both study and practice are necessary, and promise to lead to as much success in the future as they invariably have in the past." In Chapter VI. Mr. Thursfield gives a temperate account and criticism of the Dogger Bank incident and Admiral Rojdestvensky's proceedings, using the findings of the Paris Commission as the basis on which he founds his conclusions.

In Chapter VII. we have the most important in the present issue of the Annual, as it contains the masterly review of the naval campaign of 1904 by Admiral Sir Cyprian Bridge. No one more fitted to deal with this subject could have been found than the gallant Admiral, who is not only a polished and brilliant writer, a recognised authority on naval history and tactics, and an exceptionally well-read man, but he has an intimate knowledge at first hand of Japan and her Navy, having, when a Commander, served three years on the station in Sir A. Ryder's flag-ship (1874-1877), and having himself held the post of Commander-in-Chief in those waters, from which he only returned some fifteen months ago. The review is one to be read and studied, and we do not propose to comment upon it, even if our space would allow us to do so. It is full of shrewd criticism, and is accompanied by some excellent maps and plans. In his concluding remarks the author points out that "The battle-ship as a type has eminently justified her existence in this campaign. It was Admiral Togo's battle fleet, not his torpedo craft, not the sunken steamers, not the Japanese blockade mines, which really confined the Russians to Port Arthur. When they did come out it was not to fight a decisive action, but to return or try to break through their enemy's encircling force." With regard to torpedoes, the author remarks: "Perhaps nothing stands out more clearly in the campaign than the insignificance of the results effected by the locomotive torpedo. The many torpedo-craft of the Russians did not discharge one torpedo among them. Their ships discharged several, but not one took effect. . . . We are not to conclude that the locomotive torpedo is useless and a thing to be discarded entirely from naval equipment. The conclusion should be that it is a weapon of limited efficiency; to be depended on only in special circumstances of infrequent occurrence. . . . It is not too much to say that the experience of the late campaign, confirming as it does the arguments of students of tactics in these days of long-range guns, justifies a demand that torpedoes should be withdrawn from the armament of cruisers and battle-ships." With some of Sir Cyprian's conclusions, especially with his views in regard to the small value of speed as a tactical and strategical factor, many officers will undoubtedly disagree—we do ourselves; but it is not a question which can be argued here; it is interesting to note, however, that it is a question which is being much discussed by naval critics abroad.

In Chapter VIII. Lord Brassey discourses again on the "Manning of the Navy and Mercantile Marine," and he gives some details which are of value to those interested in the question. Chapter IX., on the "Imperial German Navy," by Mr. Bashford, is, on the whole, accurate and carefully written, while the concluding chapter on "The Campaign of Trafalgar," by Mr. John Leyland, who is thoroughly versed in his subject, gives a lucid survey of the general situation, and is interesting reading.

Parts II., III., and IV. call for no special comment. In matters of details of ships, much more information is undoubtedly to be found in Sir W. Laird Clowes's little pocket book, still it would probably be difficult to find space for more in the Annual; while many of the ships still remain distinctly inferior to those supplied by Mr. Jane in his "All the World's Fighting Ships"; but, on the other hand, the illustrations of ships are, as usual, most excellent. The Annual, however, must be taken as a whole, and the Editor is undoubtedly to be congratulated on his 1905 volume.

The Naval Pocket Book, 1905. Compiled by the late Sir W. Laird Clowes. London: W. Thacker & Co. 7s. 6d.

In the "Naval Pocket Book, 1905," we have a little work of undoubted value, as an immense amount of information is contained in a book of convenient size and small compass, and it ought to find a place on the shelf of every naval officer's cabin. The details given of the war-ships of all countries are concise and valuable, and there are several extremely useful tables with, in addition, a list of all the dry docks, both at home and abroad. As in Brassey, the plans of ships are rather a weak point. It is much to be hoped, however, that some one will be found to continue the late Sir W. Laird Clowes's work, and that this useful little Naval Pocket-book, which is now in its tenth year, will be continued.

Problems in Manœuvre Tactics. After the German of Major Hoppenstedt, by Major J. H. V. Crowe, R.A., *p.s.c.*, Chief Instructor, Royal Military Academy. London: Smith, Elder & Co.

Major Crowe has not been merely content with making a translation of Major Hoppenstedt's well-known work, but he has adapted the various problems to our own organisation, while still keeping the operations to the country about Metz. The problems do not deal only with the large forces, so dear to the ordinary military instructor, but many are concerned with quite small units, and relate to detached parties, reconnaissance, outpost, convoys, protection on the march, while there are also problems for each of the three arms separately and individually. The solutions—which are at the end of the book, so that students can first work them out for themselves—are clear, concise, and generally acceptable, while leaving room here and there for some natural and wholesome difference of opinion. The book should prove particularly useful to regimental and staff officers, and the consideration of such problems as are therein contained, must be of great benefit to soldiers who can thus practise the application of all they may have studied and experienced.

The reader will be surprised to find, as Major Crowe points out in his preface, how often the cavalry are used dismounted—a fact quite against the ideas which usually do and have prevailed among British officers as to the use of Cavalry in Germany.

Three good maps accompany the book, but map I. is not, perhaps, quite so clear as it might be.

PRINCIPAL ADDITIONS TO LIBRARY, SEPTEMBER, 1905.

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Minutes of Proceedings of the Institution of Civil Engineers. Edited by J. H. T. Tudsbery. Vol. CLX. 8vo. London, 1905.

With Togo. By H. C. Seppings Wright. 10s. 6d. 8vo. (Hurst & Blackett.) London, 1905.

A History of the Civil War in the United States, 1861-5. By W. B. Wood and Major J. E. Edmonds, R.E. 8vo. 12s. 6d. (Methuen & Co.) London, 1905.

Scandinavia: A Political History of Denmark, Norway, and Sweden, from 1513 to 1900. By R. Nisbet Bain. 8vo. 7s. 6d. (University Press.) Cambridge, 1905.

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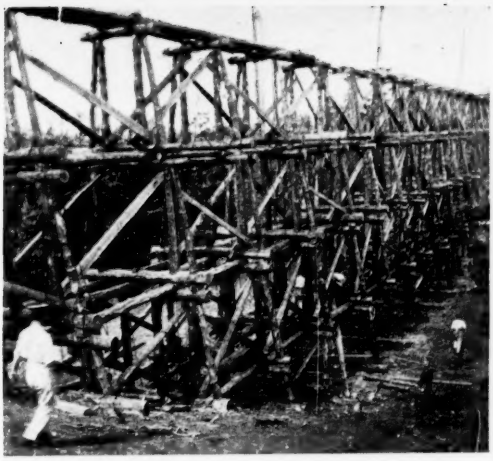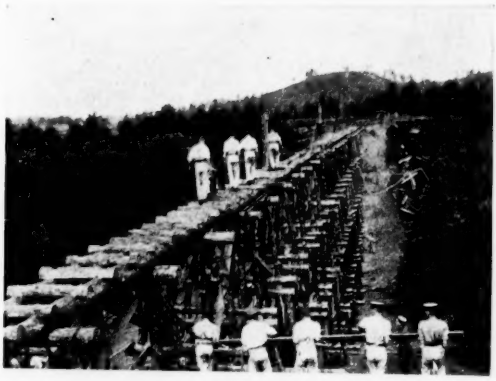
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